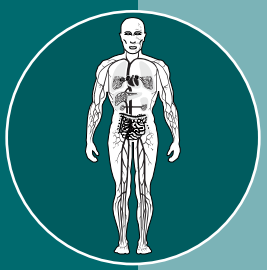
ISSN 0970 - 4086

Āryavaidyan

लाभानां श्रेय आरोग्यम्

Of all the gifts,
the most precious is health



Vol. XXVII., No.4
May - July, 2014

A QUARTERLY JOURNAL OF
THE ARYA VAIDYA SALA - KOTTAKKAL

āryavaidyan

A Quarterly Journal of
the Arya Vaidya Sala, Kottak

Vol. XXVII., No. 4 Regn. No. 55127/87 May - July, 2014

Aryavaidyan is intended to encourage scientific writing and intellectual interactions among scholars, academicians, practitioners and students of ayurveda and allied subjects like Siddha, Unani, modern medicine, etc.

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HARMONISATION OF RESEARCH IN INDIAN SYSTEM OF MEDICINE USING SYSTEMATIC REVIEW AND META-ANALYSIS

Amartya Bose* and Vikas Saroch**

Abstract: There is no doubt about the fact that harmonization in traditional or evidence based system of medicine is an utmost and immediate need in the field of Medical Sciences. The research databases are scattered in various fields of Āyurveda, Homeopathy, Unani, Siddha, etc. The common platform for all these branches of medicine including advanced Pharmacognosy and Phytochemistry, is that they all use natural drugs as their lead research compound. Significant number of the same drugs are intended to cure a wide range of ailments or disorders i.e. a particular drug has various applications. Researches in this field of Medical Science started about 5,000 years ago and still advancing globally at a rapid pace with numerous talented scholars from various fields of medicine validating their research. The only way to harmonize and establish a correlation among wide genera of research activities is to incorporate Systematic Reviews and Meta-Analysis methodologies to standardise āyurvedic research.

Introduction

Implementing Systematic Review is not new to Indian System of Medicine. Systematic Review in today's research world implies a review of a clearly formulated hypothesis that uses systematic and explicit methods to identify, select and critically appraise relevant research by gathering and analyzing data from the studies. In a lucid sense this means that the objective or purpose of the study must be clear and inclusion or exclusion criteria must also be explained. Nighaṇṭūs in āyurveda or āyurvedic nomenclature of drugs from the Vedic period have been distinctively classified on the basis of stories, action, origin, properties, characteristics, synonyms, etc. Medical texts like Rājanighaṇṭu have mentioned seven basis of nomenclature of drugs. Dhanvantarīnighaṇṭu is the oldest nighaṇṭu. Considering these perfections the confusion lies that research in this field now-a-days is unstructured. Researches on some ISM drugs are being validated in different processes and since most of these drugs are polyherbal complexes specificity for a particular cause is a concern. The research findings lay scattered globally, published in various esteemed journals. To execute a research work analyzing the available literature and data are one of the preliminary steps.

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Systematic Review process will ensure collection of structured and organized data facilitating the research process rapidly and accurately. Meta-analysis will enable the data obtained from a Systematic Review to be interpreted and analyzed using statistical concepts for instance basic Mean, Mode, Median calculation via techniques like Sensitivity Analysis, Meta-regression Analysis, Subgroup Analysis, Factor Specific Analysis depending upon the type of data which may be Dichotomous (events) or Continuous and the nature of the study. Statistical concepts of Chi-Square Test, F-Test, and T-test are also applied.

Cumulatively these two processes if executed accurately should limit the bias factor in any research study and collect authentic mathematical data to start a research with specific and defined objectives. The quality of research will increase and a platform to correlate various research activities in this field of Medical Science can be established.

Methodolgy

The methodology has been divided into the following aspects:

1. Preliminary concepts and terminologies
2. Execution of systematic review
3. Execution of meta-analysis
4. Applications
5. Harmony in ISM and clinical research
6. Advantages and disadvantages

Preliminary concepts and terminologies

A glossary of scientific terminologies makes the preliminary concepts of how to design a research clear. These terminologies are important to execute a systematic review and perform a meta-analysis of the data based on epidemiology and surveys. (Additional terminologies, concepts are equally important depending on the nature of the research.) They are as follows:

Research:- Diligent or systematic inquiry or investigation into a subject in order to discover or revise facts, theories, applications and having a social, clinical, economic impact in the society."Scientific Research is systematic, controlled empirical and critical investigations of natural phenomenon guided by the theory and hypothesis about the presumed relations among such phenomena" (Karlinger, 1986).

Sampling frame:- It is defined as the list from which the potential respondents are drawn.

Therapeutic index:- Of a drug, it is the ratio of the dose that produces toxicity to the dose i.e. clinically effective or desirable in the population.

Cohort study:- A particular population at risk for the disease/event is followed overtime for the occurrence of the disease/event.

Drug utilization study review:- It describes how a drug is marketed, prescribed and used in the population and how these factors influences outcomes including clinical, social and economical outcomes.

Sentinel sites:- Active surveillance can be achieved by reviewing medical records/ interviewing patients/physicians in a sample of sentinel sites to ensure complete and accurate data on reported adverse events from these sites.

Absolute risk:- Risk in a population of exposed person; the probability of an event affecting members of a particular population. Absolute Risk = incidence/prevalence

Attributable risks:- It is the difference between the risks in an exposed population (absolute risk) and the risk in an unexposed population (reference risk).

Casualty Assessment:- Evaluation of the likelihood that a medicine was the causative agent of an observed adverse reaction.

Reporting odds ratio:- It is defined as probability of an occurrence (p) / probability of its nonoccurrence (1-p).

Drug era:- It represents a continuous period of drug usage, possibly augmented with an additional off drug period.

Polypharmacy:- It is the co-contaminant use of more than one drug sometimes prescribed by different practitioners.

Critical terms:- Terminology in WHO-ART, may indicate serious disease states.

Benefit risk analysis:- Examination of the favorable and unfavorable results of undertaking a specific course of action.

Cem flow:- The software developed by the UMC for collection and analysis of data in cohort event monitoring.

Signal:- It is a reported information on a possible relationship between an adverse event and a drug, unknown or incompletely documented previously.

Scaling techniques:- Nominal (name and account, e.g. chi-square test), Ordinal (ranks/ orders e.g. Nonparametric tests used in qualitative research), Interval (score/marks), Ratio (Data allows forming quotients and represents the actual amount of variables).

Parameter:- A number that describes the population, fixed but unknown e.g. population mean is a parameter.

Codes and policies:- National Institute of Health (NIH), National Science Foundation (NSC), Environmental Protection Agency (EPA), United States Department of Agriculture (USDA), American Chemical Society, Nuremberg Code and declaration of Helsinki (World Medical Association), World Health Organization Research Ethics Review Committee (WHOERC).

Mode:- Value that occurs more often in a series of numbers.

Mean:- Arithmetic average of a series of numbers.

Median:- Value that occurs midway in a series of numbers arranged from lowest-highest.

Normal/bell curve:- It is an idealized curve and is theoretically based on an infinite number of sample.

Variable:- Any characteristic of an individual/ entity. A variable can take different values from different individuals.

Dispersion:- Range of variability (r=h-1).

Population:- An aggregate of objects or individuals under study is called population or universe.

Meta-populations:- Suite of population in a region that are semi-isolated from each other because of habitat, heterogeneity but shows significant interchange of propagules (Levin, 1970).

Infinite island model:- A landscape neutral model that assumes equal population size and equal exchange of migrants across all populations (Sewall Wrights, 1943).

Metapopulation models:- A demographic model that describes a set of population with certain extinction probabilities that are connected by migration of colonists (Levin, 1970).

Landscape model:- Uses especially explicit

information about the mosaic of habitat types to describe the landscape.

Basic research concepts:- A concept of mixing different methods (Campbell, 1959), Qualitative plus Quantitative data (SD. Sieber, 1973).

Sociology:- A science, a logical system that bases knowledge on direct, systematic observation. Scientific sociology is the study of society based on systematic observation of social behavior e.g. Max Weber's model of Value Free Research. The term Critical Sociology was introduced by Karl Marx.

Statistics Package for Social Science (SPSS):- Can import data from almost any type of file to generate tabulated reports, plots of distribution, trends, descriptive statistics, etc.

"All Meta-Analysis may not be a Systematic Review but all Systematic Reviews are followed by Meta-Analysis".

Execution of systematic review

Definition:- Systematic Review is the gathering of all empirical and evidence based data that complies with pre-specific eligibility criteria previously formulated to answer a specific research or clinical question.

Explanation:- Systematic Review ensures evidence based data to create a framework and ensures the clinical relevance of the question. Medical science advancements and communications follows an active "Knowledge Translation Path" which is a process that includes repeated information gathering, analyzing, implementing, protecting and finally having a beneficial impact. Survey elucidates that annually approximately 3 million articles are published in 30,000 journals globally.[5] Though the increase in knowledge is a fact that needs appreciation but a substantial amount of research published in medical journals is not relevant to be clinically useful. For a researcher it is too much information, but very less time and thus access to quality information is never easy. Sometimes Expert Reviews are also inconsistent with the best available evidences and creates conflicts amongst individual recommendations. The ultimate result is formation of a bias or deviating from the truth. Systematic Review comprehensively incorporates, locates, evaluates and synthesizes all the available literature on the given topic following a scientific design which must be clearly stated in the review.

Methods:- Fundamentally, Systematic Review process is classified under three major heads: i. Planning the review, ii. Conducting the review and iii. Reporting and dissemination. The first approach is to formulate research questions which can be done in a manner, for instance, PICO (What type of epidemiology should be studied/considered? What types of interventions are there? What are the variables/ parameters? What are the outcomes?) A typical PICO question is, "What is the best strategy to attain balance in health for elderly people''? Another similar kind of methodology is to apply the FAST Tool [Find, Appraise, Synthesize, and Transfer]. The robust literature survey may include Electronic Databases, Grey Literature, unpublished source or raw data from published trials. Valid literature must be selected which means the extent to which trial design, conduct, analysis and presentation have reduced biases. The next approach is to collect and extract the data out, synthesize it and display it graphically via methods for instance.

The Forest Plot:- It is a method which allows visual examination of heterogeneity between studies. It is a common scale represented by black spots and horizontal lines and gives an estimation of the Credibility Interval which is an essential parameter of stability in the research. The area of the black square represents the impact of the study in Meta-Analysis. (Fig. I)

The publication bias regarding reported studies can be minimized by following the www. controled-trials.com. In addition factors like criticism of selective evidence, citation factors, time bias, language bias, calculation of 'p' value from registered Vs. unpublished studies may also be considered depending upon the objective of the study.

Execution of meta-analysis

Definition:- Meta-Analysis is an optional part of systematic review. It enables the researcher to estimate an average or identify a common effect from multiple studies thus improving the accuracy of the estimate by covering all possible data.

Explanation:- Meta-Analysis is used in the following cases: When more than one study has estimated an effect; when there are no differences in study characteristics that may possibly infer an outcome; and when the outcomes are similar.

Methods:- The primary step is to find out the average of the studies. A simple average gives the studies equal weightage. The next step is to weight the studies in terms of epidemiology, more events, and low variances. The final step is to display the results graphically using Revman Forest plot methods, Logistic regression models to adjust the effect of variables, Population Correlation Coefficient that measures the strength of the association between different variables, Funnel plot method which are plots of trials that may validate Meta-Analysis. A symmetrical shape of graph is intended since greater scatter in estimate is expected from smaller studies. (Fig. 2)

Applications

They are: 1. Statistical accuracy and precision in analyzing effects, 2. Identification of heterogeneity in effects from multiple studies, 3. Reducing study variables, 4. Develop, filter and test hypothesis, 5. Identification of the

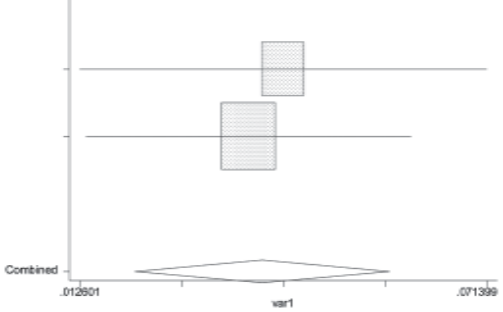

Fig. I. A Typical forest plot

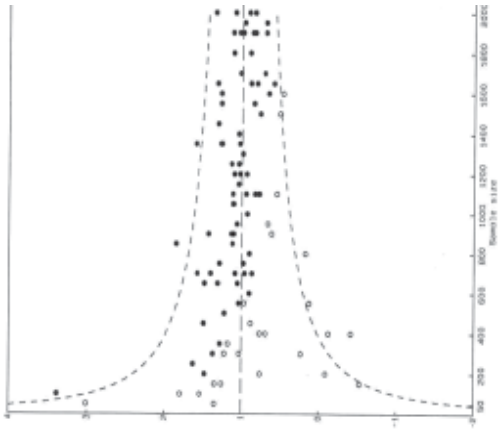

Fig. II. A Typical funnel plot

missing link/data gaps in the knowledge repositories, 6. Calculation of sample size, 7. Suggest research patterns in the future.

Harmony in ISM and clinical research

Research in ISM drugs is scattered and unstructured. Since the little available classical literature is actually very vast, validation of all classical medicines is essential. This would take infinite time to validate the available Ayurvedic literature. For this reason clinical investigation of ISM drugs is not highlighted. Ayurvedic herbal and herbo-mineral drugs have various chemical constituents, so standardisation has always been an issue. Methods like Systematic Review and Meta-Analysis will initiate a structured research approach based on identifying/treating specific disease conditions. Clinical research if conducted in this manner will give positive results and most importantly it will reduce the bias factors.

Advantages and disadvantages

Statistical accuracy, Survey methodologies, Reducing bias factor, Robustness across PICOs are the various advantages of these methodologies but these may also incorporate small biases which may be real effects.

Discussions

Āyurvedic Medicinal Research has to validate more different statistical tools to validate the lead compounds effectively. Though initiatives have been taken in a bio-informatics perspective, effective Data Modeling Techniques must be introduced in Research; Protocol-oriented research methodologies must be made mandatorily. Sequence based reportings and generating sequences between Ayurvedic drugs will reduce standardization complications and increase efficacy of the medicine. ISM drug control authorities must introduce feasibility questionnaires to promote classical medicines via using tools e.g. Visual Analogue Scale, which is a measurement instrument for subjective characteristics or attitudes that cannot be perfectly measured. While responding, the respondents will specify their level of agreement with the statements by indicating a position along a continuous line between two end points.

Conclusions

Classical Research process in āyurveda mentions about four broad stages - pratyakṣa (perception), āptopadeśa (advise of great seers), yukti (logic) and anumāna (inferences). Following these four primary methodologies and including specific research process in āyurveda supported by statistics will validate the precious and unique classical medicines and may be then the Central Drug Standard Control Authority will allow clinical trials to be conducted on āyurvedic/herbal medicines on a much frequent basis unlike the other system of medicines. Research grants for āyurvedic medicine are not granted on a large scale basis and the room for experimenting, executing trial and error methods is a cumbersome process. Thus the first step is to create an āyurvedic database based on Systematic Review and Meta-Analytical concepts to make the population understand that āyurveda in India needs the thrust and immediate importance as this system aims in curing the body rather than a particular disease. Lastly, the present scenario of āyurveda is quite similar to Plato's logic that "Necessity is the Mother of (Re)-invention". It is understandable that this type of validation is a continuous process but the controlling authorities should engage

specialists in this field to validate a continuously developing databases of a science which is approximately 5,000 years old.

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RETROSPECTIVE REVIEW ON ĀYURVEDA INTERVENTION PROTOCOL IN VARICOSITY AND DEEP VEIN THROMBOSIS – AN OBSERVATIONAL STUDY

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Abstract: Vascular diseases are becoming a major concern for the society and medical community in recent times. Life style changes and occupational pattern are considered to be significantly contributing to this situation. Varicosity and deep vein thrombosis (DVT) are more common among the vascular diseases globally. Modern medicine and surgery throws up intervention options which are invasive, expensive and comparatively less safe. Āyurveda with its vast history and literature had dealt with vascular diseases with great importance. Pathophysiologic and management concepts of vātavyādhi, granthi, vātarakta and śopha throw much deeper insight in this regard. Āyurveda physicians of Kerala have been managing these conditions with expertise utilising this knowledge. Although various studies have been reported on efficacy and safety of various āyurveda medications and therapies, no studies have been so far conducted on the holistic intervention approach adopted by Kerala physicians. This observational study is a preliminary attempt in this area.

Introduction

Āyurveda with its abundant literature had dealt with vascular diseases in detail. It is noticeable from the fact that Sūtrasthāna and Śārīrasthāna of all Samhita contain descriptions on structure and functions of various vascular structures like sira, dhamani, etc. and likewise chapters on śopha, granthi, vātavyādhi, vātarakta, etc. are found in the Nidānasthāna and Cikitsāsthāna. Categorically, it can be stated that ancient wisdom of India was well aware of the importance of vascular system in health and disease.

Vascular disease is the term that describes blood vessel diseases. Atherosclerosis, aneurysm, venous thrombosis, varicose veins, venous insufficiency, vascular birth defects, inflammatory vessel disease, lymphoedema and vasospasm are the common vascular diseases.[1] Varicose veins affect up to 25 percent of women and 15 percent of men. By the age of 50, nearly 40 percent of women and 20 percent of men have significant leg vein problems.[2] Deep vein thrombosis (DVT) is also getting more prevalent in the society. Factors such as trauma to the legs, injury to the veins, a recent surgery or hospitalization, obesity, prolonged immobil-ity such as a long aero plane ride or bed rest, taking birth control pills, cancer and even pregnancy can also increase the risk of

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developing blood clots in the veins. In addition, people who have a history of a blood clot have a higher chance of having another.[3]

Symptomatology of varicose veins apart from visible enlarged veins are ankle and leg swelling, heaviness or fullness, aching, restlessness, fatigue, pain, cramps and itching. Varicose veins can also be associated with ulcers (sores) of the legs. In the most severe cases, varicose veins may lead to thickening and discolouration of the skin of the legs, eczema and non-healing sores around the ankle area.[4] Sudden swelling of one limb, pain or tenderness, skin that is warm to the touch, fullness of the veins just beneath the skin and change in colour (blue, red or very pale) are the common presenting complaints of DVT. When pulmonary embolism is associated, features like shortness of breath, sudden chest pain, feeling of apprehension, sudden collapse, coughing, sweating and bloody phlegm (coughing up blood) may also present. Pathophysiological phenomenon behind varicose veins and DVT are considered as defective venous valves and thromboembolism respectively.[5]

Symptomatology and pathophysiology equates this disease with features of sirāgatavāta,[6] sirāgranthi,[7] vātarakta pūrvarūpa,[8] vātarakta[9] and ekāṅgaśopha.[10] A comparative data is shown in Table 1.

Various internal and external medications and therapies have been applied in clinical practice of these conditions and their efficacies have been reported. But, holistically the treatment approach of ayurveda physicians of Kerala has not been studied. This observational study is a preliminary attempt aimed at 1) a better understanding of the clinical practices in varicosity and deep vein thrombosis and 2) to check the possibility of developing a guideline on the āyurveda management of varicosity and deep vein thrombosis on the basis of the understanding.

Materials and methods

Management of varicose veins and deep vein thrombosis was done at both OPD and IPD levels of Panchakarma department of Vaidyaratnam P S Varier Ayurveda College, Kottakkal. Patients diagnosed with both these conditions were put through various screening tests for assessment of chronicity, severity, prognosis, feasibility of intervention, etc. based on Dashavidha-pareeksha and current diagnostic approach in modern medicine.

Dosha characterization (ekadosha/samsarga/sannipata, kevala/dhatusahita/malasahita, etc.), intensity of dosha-kopa (bahu/madhya/alpa), rogibala (based on age/co-morbid conditions like DM, HTN, etc.) were thoroughly worked up before advising Ayurveda intervention protocol. Use of CEAP (clinical severity, etiology, anatomical involvement and pathophysiology) classification was also employed in cases of varicose veins. (Table 2)

Diagnosis of DVT was confirmed by an ultrasound examination. Patients with positive findings of ultrasound scan along with clinical presentation of DVT features were advised Ayurveda intervention protocol.

As mentioned earlier in the introduction part, the Ayurveda intervention protocol was designed after evaluating the concepts of siragata-vata, sira-granthi, sopha and vata-rakta chikitsa. Langhana (Pachana) was advised initially. The modality of Langhana (kashaya-paana/lepana/seka/udvartana) was selected on

the basis of Dosha character and intensity. Medications advised in the initial phase of Ayurveda intervention protocol is shown in Table 3.

Endpoint of pachana was again evaluated for the intensity of dosha-kopa. On finding involvement of multiple rogamarga and with features of deeper dhatu-vaha srotodushti, virechana was advised. Abhyantara-snehana was done as preparatory to virechana in cases admitted to the IPD. *Madhu-yashtyadi taila, sahacharadi taila, dhanvantaram taila (all sevya-paaka)* and *gulgulugulutiktakam ghritham* were the formulations selected for internal snehana. Mridu-sveda was done after attainment of samyak snigdha features for three days. For virechana, *nimbamrithaadi eranda, avipathi choorna* and *maanibhadragulam* were advised in suitable doses. Patients at OPD level underwent simple purgation with any one

TABLE 1

Varicose vein - A table of comparison with the features of other diseases

Disease	Causative factors	Pathological phenomenon	Symptomatology
1. Varicose veins	Family history, prolonged standing, heavy lifting, multiple pregnancies, prior history of blood clot, limited physical activity, hyper-tension, obesity, etc.	Defective venous valve	Ankle and leg swelling, heaviness or fullness, aching, restlessness, fatigue, pain, cramps, itching, ulcers (sores) of the legs, thickening and discoloration of the skin of the legs, eczema and non-healing sores around the ankle area
2. Varicosity and deep vein thrombosis	Prolonged immobilization, long periods of travel, injury, family history, obesity, cancer, smoking, congestive heart failure, chronic respira-tory failure, pregnancy, estrogen treatment, etc.	Thrombus formation and embolism	Sudden swelling of one limb, pain or tenderness, skin that is warm to the touch, fullness of the veins just beneath the skin and change in colour (blue, red or very pale)
3. Siragata-vata	Tikta, katu, kasaya rasa-sevana, alpa-ruksa bhojana, vega-dharana etc.	Vata-kopa in sira due to dhatuksaya/marga-avarana	Aadhmana and riktata in sira
4. Sira-granthi	Pada-atigamana, sahasa ambho/avagahana, vyayama, etc.	Sampeedana, sankochana, visosana and vakrikarana of sira-jala by vata and rakta	Nisphura-niruja granthi
5. Vatarakta	Vidahi, virudha anna, acan-kramanasilana, abhighata, sukumara-prakruti etc.	Vata-kopa and vimarga-gamana, rakta-kopa and rakta-dusti	Kandu, tamra-syava-lohita tvak, sayama, bhrisa daha-oosha, etc.
6. Sopha	Pada-atimargagamana, ksobhayana-gamana, guru, amla, lavana, ksara bhojana.	Vata-kopa in tvak and mamsa	Davathu, sirayama, anga-gaurava, sopha, etc.

TABLE 2

CEAP (Clinical severity, Etiology, Anatomical involvement & Patho-physiology) classification

1. Clinical classification:	
- No visible or palpable signs of venous	C0
- Telangiectasies or reticular veins	C1
- Varicose veins	C2
- Edema	C3
- Pigmentation or eczema	C4a
- Lipo-dermatosclerosis/atrophie blanche	C4b
- Healed venous ulcer	C5
- Active venous ulcer	C6
- Symptomatic, including ache, pain, tightness, skin irritation, heaviness, and muscle cramps, and other complaints attributable to venous dysfunction	S
- Asymptomatic	A
2. Etiologic classification:	
- Congenital	Ec
- Primary	Ep
- Secondary (post-thrombotic)	Es
- No venous cause identified	En
3. Anatomic classification	
- Superficial veins	As
- Perforator veins	Ap
- Deep veins	Ad
- No venous location identified	An
4. Patho-physiologic classification	
- Reflux	Pr
- Obstruction	Po
- Reflux and obstruction	Pr,o
- No venous patho-physiology identifiable	Pn

of these virechana-yoga without undergoing sneha-sveda. Patients were put on a minimized, modified peyaadi-krama following virechana. On completion of peyaadi-krama, samana oushadha yoga was advised. Internal medications advised in the later phase of Ayurveda intervention protocol is shown in Table 4.

Bahya-snehana interventions like seka (*sahacharadi taila, parantyadi taila, pindataila*), snigdha-pinda sveda (*shashtika-shali-pinda*), shashtika-annalepa were also advised in the later phase. Intermediately rakta-moksha was carried out by means of modified sira-vedha technique or jaloukavachacharana depending upon characteristics of dosha-kopa. (Fig. I)

TABLE 3

Medicinal form	Formulation
Kasayam	Rasnasaptakam, punarnavadi, panchatiktakam, gulgulutiktakam, dusparsakadi, manjistadi (internal); nimba-kvatha, manjista-kvatha (external)
Gulika	Candraprabhavati, goksuraguggulu, amritaguggulu, kaisoraguggulu
Arista-asavam	Punarnavasavam, duralabharistam, nimbamrtasavam, aragvadharistam (internal); dhanyamla (external)
Curnam	Saddharanam, vaisvanara, pancakola (internal); nimbapatradi, upanaha, jatamayadi (external)

TABLE 4

Medicinal form	Formulation
Kasayam	Sahacaradi, sathavaryadi, kokilaksakam, balagulucyadi, dhanvantaram, indukantham (ksira-kvatha also depending upon agni-bala)
Arista-asavam	Balaristam, kasturikalparasayanam, saribadyasava
Gulika	Kaisora-guggulu, punarnava-guggulu
Ghritha/taila	Lasuna-ksirapaaka, dhanvantaram avartti (101), sahacaradi avartti (101), ksirabala avartti (101), madhu-snuhirasyanam

Observations and analysis

During almost last three months, totally 144 cases reported with these conditions. It was observed that females were affected more with

Fig. I. Siravedham

varicosity of veins of lower limbs which may be due to factors such as multi-parity, long hours of standing/travelling. Sannipata dosha-kopa and apaana-vatavaigunya were more commonly found on evaluation of Dosha among the cases of varicosity which may be due to factors such as irregular dietary habits, mental stress, multi-parity (in women) etc. Most reported cases of deep vein thrombosis were patients with history of sedentary life style and atherosclerosis. Men who have worked abroad for more than 1-2 years showed pre-disposal to this condition.

Most of the cases who had received the Ayurveda intervention protocol (IPD/OPD) clinically responded well to the treatment. Delayed response/requirement of prolonged duration of phases of intervention was observed in patients who reported with association of DM, HTN and dyslipidaemia. Poor compliance to the protocol was another factor observed along with this. It was significant to observe that most cases of varicosity/deep vein thrombosis who responded well to the intervention protocol did not have any physical changes in the anatomical areas of involvement.

Discussion

This observational study on Ayurveda treatment protocol in practice at the OPD and IPD of Panchakarma department, Vaidyaratnam P S Varier Ayurveda College was aimed at a better understanding of the clinical practices in varicosity and deep venous thrombosis and to check the possibility of developing a guideline on the Ayurveda management of varicosity and deep vein thrombosis on the basis of the understanding. Treatment concepts from siragatavata, siragranthi, vatarakta and sopha

were utilised in these conditions and were found effective in terms of clinical symptomatology.

In varicosity and deep vein thrombosis, the initial phase of clinical presentation was evaluated in terms of siragata-vata, sira-granthi, vatarakta and sopha and on association of saama features, pachana aimed at correcting rasavaha and raktavaha srotas were applied. Transdermal applications such as lepana, udvartana and parisheka were also applied at this stage. Endpoint of pachana was again evaluated for the character and intensity of dosha-kopa. On finding involvement of multiple rogamarga and with features of deeper dhatuvaha srotodushti, virechana was done followed by modified siravedha/jaloukavacharana. In patients with involvement of bahya-rogamarga alone and with typical raktavaha-srotodushti features alone modified siravedha/jaloukavacharana was carried out directly. In the later phase, the internal medications were focusing on correction of peripheral venous insufficiency and maintenance of healthy vascular tissue. Formulations of guggulu (*Commiphora mukul*), chopachini (*Smilax china*), lasuna (*Allium sativum*), sahachara (*Barleria prionitis*), punarnava (*Boerhaavia diffusa*), etc. were internally administered for correcting venous insufficiency. Internal snehana, pitha-rakta samana oushadhi like guduci (*Tinospora cordifolia*), etc. were given for maintenance of healthy vascular tissue. External therapies like kayaseka, pindasveda, annalepana etc. were also utilized in this phase.

This study recognized the need for a holistic Ayurveda perspective in the management of varicosity and deep vein thrombosis based on authentic and popular Ayurveda interventions and current diagnostic approach in modern medicine. This study also recommends randomized controlled trials (RCT) and case studies (black-box design) to be conducted in future in this regard.

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EFFICACY OF SIVAGUTIKA ALONG WITH BALANIRUHAVASTI IN PELVIC INFLAMMATORY DISEASE - A CLINICAL STUDY

Vishwesh B.N* and Manjari Dwivedi**

Abstract: Pelvic Inflammatory Disease (PID) is an infective condition of genital tract with symptoms like lower abdominal pain and tenderness, abnormal vaginal discharge, chills, and fever. Various yonivyapats, presenting with the above said symptoms like adhodara sula, shoola in maithuna, jwara and yonisrava include vatala, sannipatika, paripluta, mahayoni and so on. This article reviews the clinical effect of an Ayurvedic formulation Sivagutika along with balaniruhavasti on certain symptoms of PID through clinical trials with an intention to maximize its clinical effectiveness and hasten its integration into wider clinical practice. Sivagutika was administered twice daily with honey after food for sixty days. Yogavasti, i.e 8 vasti were administered to each patient-3 anuvasanavasti and 3 asthapanavasti were administered on alternate days and 2 anuvasanavasti were administered at the end. In most of the cases, there was progressive reduction in the symptoms with time, indicating the efficacy of the therapy in PID.

Introduction

Pelvic inflammatory diseases are that where fallopian tubes, ovaries, cervix or uterus are inflamed and infected.[1] Its incidence is noted in 10% of the reproductive aged women. PID may also be caused by sexually transmitted infection such as Chlamydia or Gonorrhea. If PID goes untreated, it causes scarring around the inflamed organs, which leads to infertility, chronic pelvic pain, pelvic cellulitis, abscess formaion and blocked fallopian tubes, which make an ectopic pregnancy more likely.[2]

Symptoms of various yonivyapatas specially udavarta, vatala, sanipatika, paripluta, pittala resembles with pelvic inflammatory diseases with main symptom of pelvic pain. This can be considered as tridoshajavyâdhi with vata predominance. In this there is derangement of vayu, especially apana and vyana vayu.[3]

In modern system of medicine antimicrobials, analgesics, NSAIDs are often prescribed in the treatment of pelvic inflammatory diseases.[4] Analgesics and anti-inflammatory drugs not only increase gastrointestinal upsets but also produce headache, dizziness and drowsiness. There is a great scope of research to find out management with long lasting effect, to treat the entire feature complex with single regimen. The aim of this study was to find out a safe, potent, cost effective non-surgical management for pelvic inflammatory diseases.

Materials and methods

A single arm before and after clinical trial was conducted at the OPD of Prasutitantra, S.S.

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Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi. 15 patients who met the entry criteria with pelvic inflammatory disease were assessed for signs and symptoms prior to and during the course of the treatment.

Trial drugs

Sivagutika is explained in the Rasayanaadhyaya of Cakradatta.[5] Shivagutika with shilajith as its main ingredient is indicated for various types of yoniroga, arbuda, pradara and considered as rasayana. The pharmacological activity of silajit shows good anti-inflammatory and analgesic properties, which is recommended in PID. Hence it was selected. The drug was purchased from the market.

Bala (*Sida cordifolia*) was collected from in-and-around of Varanasi. Balataila was prepared by using balamoola and shuddhatilataila at Ayurveda Pharmacy, BHU as per tailapaka method. After proper identification of the crude drugs, a crude coarse (yavakuta) powder of bala for kvatha and a fine powder (kalka dravya) of the drug needed for asthapanavasti, was prepared.

Sivagutika: - The ingredients of Sivagutika are explained in Table 1.

Balaasthapanavasti:- To one part of crude drug i.e. dried bala (70 gm kvatha dravya), sixteen parts of water was added and kept for half an hour. This mixture was allowed to boil gently till reduce to one fourth part (270 ml). The decoction was strained and used thoroughly mixed with the following:

Madhu	100 ml
Saindhavalavana	5 gm
Bala taila	150ml
Kalka	50 gm
Kvatha	270 ml

Inclusion criteria

Patients of reproductive/child-bearing age, with symptoms of PID such as lower abdominal pain, abnormal vaginal discharge, low backache, menstrual abnormalities and dyspareunia; who diagnosed to have PID in the last 6-12 months and ready to undergo relevant investigations and hospital admission.

Exclusion criteria

Pregnant or unmarried women; patients suffering from any systemic disease like tuberculosis, hypertension, diabetes with history of drug allergy and psychological disorders; patients having specific pathology of genital tract i.e. benign or malignant tumor, erosion of cervix, etc; subjects with history of recent delivery or abortion and patients with

TABLE 1
Ingredients of Sivagutika

Name	Latin name	Qty (gm)
1. Silajith	Bitumen	640
2. Sunti	*Zingiber officinale*	80
3. Pippali	*Piper longum*	80
4. Katuka	*Neopicrorhiza scrophularicflora*	80
5. Karkatasrngi	*Pistacia integerrima*	80
6. Marica	*Piper nigrum*	80
7. Vidarikanda	*Pueraria tuberosa*	40
8. Talisapatra	*Abies webbiana*	160
9. Vamsalocana	*Bambusa arundinacea*	20
10. Patra	*Cinnamomum tamala*	20
11. Tvak	*Cinnamomum zeylanicum*	20
12. Nagakesara	*Mesua ferra*	20
13. Ela	*Eletaria cardamomum*	20
14. Sesamum oil		80*
15. Sugar		640
16. Ghee		160
17. Honey		320

*ml

acute PID who required hospitalization.

Drug administration

Sivagutika (500 mg) was administered twice daily with honey after intake of food for sixty days.

Yogavasti i.e. 3 anuvasanavasti, 3 asthapanavasti on alternate days and 2 anuvasanavasti at the end were administered to each patients.[6] The dose of asthapana (niruha) vasti was as mentioned in Sarngadharasamhitha[7] i.e. - 3 kudava (nearly equivalent to 570 ml) and the dose of anuvasana vasti (by balataila) was 1/8th to that of asthapana i.e. approximately 70 ml.[8]

Study variables

The primary study variables were the following: a) clinical signs and symptoms of PID; 2) USG findings.

A checklist was prepared to mark the presence/ absence of the signs and symptoms of PID (abdominal pain, per vaginal discharge, low back ache, dysmenorrhea, dyspareunia and tenderness in fornices). Ultrasonography of pelvic organs was carried out for the presence of fluid collection in pouch of Douglas and to know the condition of adnexal uteri. High vaginal swab culture and sensitivity test was done for identification of specific organism. The patients were then subjected to the treatment. The presence (mild /moderate) or absence of each of the above mentioned signs and symptoms were assessed before and after the treatment.

Statistical analysis:- Statistical analysis was done using paired student-t test and wilcoxon signed rank test wherever applicable.

Observations

Among the 15 patients, the incidence of PID was more in the age group 31-35 yrs (32%), majority ones being house wives (85%), with larger percentage having irregular bowel habits (71%). Utmost percentage of patients were with gravidity 3 (32%), parity 2 (39%) and no history of abortion (53%). The age of menarche was 13-14 years in 82% of patients, duration of menstrual bleeding 3-4 days in 60% of patients, amount of menstrual bleeding average in 64%. 35% of patients used barrier or safe period method for contraception. Frequency of sexual intercourse was 2-3 times/week in 75% of patients.

Pain in lower abdomen was absent in 14%, mild in 57% and moderate in 29% of patients. Abnormal per vaginal discharge reported was mild in 29% of patients and moderate in 71%. Low backache score reported absent in 36%, mild in 57% and moderate in 7% of patients. Pain during menstruation was absent in 36%, mild in 36% and moderate in 28% of patients. 50% of the study subjects reported with dyspareunia whereas it was absent in the other 50%. Tenderness in fornices was absent in 50% and present in the rest 50%. The presence of positive finding of PID in USG was present in 57% and not present in 43%.

Results

Sign and symptoms:- Abdominal pain, per vaginal discharge, low back ache, dysmenorrhea, dyspareunia and tenderness in fornices showed statistically significant reduction (Table 2). During the follow up, there was one dropout and hence the statistical analysis was done for only 14 subjects.

USG Findings:- The presence of positive finding of PID in USG was noticed in 9 patients at first visit (64.28%). However, in 4th follow

up it was present only in 2 patients (14.28%). Comparison of USG finding between initial and last follow up showed significant values (p<0.05.S) (Table 3).

Discussion

Women with symptomatic PID commonly have lower abdominal pain and tenderness (especially during coitus), abnormal vaginal discharge, chills, and fever. Therapeutic goals for treating PID are elimination of reproductive tract infection and inflammation, improvement of symptoms and physical findings, prevention or minimization of long-term squeal.[9]

Silajatu, the main ingredient of Sivagutika has kashaya, amla rasa, katu vipaka, anushna sita virya.[10] It is useful in alleviating tridoshas. It possesses rasayana and vrishya properties.[11] It is useful in the treatment of prameha, pandu, gulma, pleeharoga, sthaulya, shotha, jvara, etc. It is said that there is no such disease which cannot be cured with silajatu.[12] Silajatu is also used as yogavaha as it increases efficacy of many drugs. Apart from this the other drugs in Sivagutika have kapha-vata-samaka property. Silajatu has significant anti-inflammatory, analgesic, immuno modulatory, antiviral and antioxidant activity.[13] Antimicrobial activities against *Staphylococcus aureus, Escherichia coli* and *Candida albicans* and *S. aureus* and antifungal activity against *Alternaria cajani* were identified.[14]

Vata is considered to be the main controller of the body. If vata either alone or in combination with other dosa gets vitiated, vasti can be administered which normalizes the path of vayu along with pitta and kapha.[15]According to acharya charaka, guda is sarira mula and is rich in sira. These sira provide nutrition to the whole body.[16] Hence, drugs in the pakvasaya get absorbed through these siras, reach every part of body and perform their action wherever required. Charaka explains that even though administered in pakvasaya, vasti performs its sarvadeha karma by virya and controls all the three dosas.[17] Vasti eliminates all the three doshas from the pakvasaya, but the main action of vasti is upon vatadohsa which is pradhana among three doshas and controls the other two.[18]

According to acharya Charaka, vata plays key role in all types of yoniroga. In all the verities of the yoniroga, irrespective of the dominance of pitta or kapha, one can find the involvement of vata. Therefore, first the aggravated vayu should be alleviated, and only after therapies should be administered for alleviation of other doshas.[19] Vasti is mentioned as one of the best therapeutic procedure for alleviation of vatadosha.[20]

Vasti may be absorbed by diffusion, filtration, osmosis or by adsorption depending upon substance used in it. Vasti drugs are absorbed from the intestines through the rich blood supply of rectum and acts on all over the body. From capillaries and lymphatics of intestines, it will reach to systemic circulation and then will act on all the bodily organs.

ENS (Enteric Nervous System) is substantial group of neurons. It is capable of autonomus reflex without influence of central nervous system. More than 500 million neurons are present in the ENS, so it is called as the "second brain". There are so many similarities between CNS-ENS regarding cellular structure, neuropeptide secretion and specific functions. And recent studies have shown that there is great influence of CNS (Central

Nervous System) and ENS on each other. On the neuro-humoral system of body, per rectal administered acts by stimulating CNS through ENS; by restoring the physiology at molecular level and it can also act on the inflammatory substances like prostaglandins, vasopressin, etc. by its various contents which have analgesic anti inflammatory properties.[21, 22]

Conclusion

From the above clarifications it can be concluded that Sivagutika along with balaniruhavasti efficiently decreases the symptoms of PID, clinically controls infection and can be recommended in the management of Pelvic Inflammatory Disease.

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EFFECT OF LEKHANA VASTI IN THE MANAGEMENT OF DYSLIPIDEMIA - A CLINICAL STUDY

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Abstract: Dyslipidemia is one of the faulty life style disorders. In every 1% increase in the cholesterol level there is 1-2% increase in the incidence of Coronary Heart Disease. Lipids can be correlated to that of medodhatu. According to the references, dyslipidemia can be correlated to medodosa and subsequently as medoroga. The treatment principles mainly includes samsodhanacikitsa (bio- cleansing), whereas in modern treatment, statins are first choice of drug. In view of the adverse reactions and limitations in the modern medications, a clinical trial was carried out in 30 patients having dyslipidaemia. Lekhana Basti was administered and the effect of treatment on the complete lipid profile was assessed after the treatment. Statistical analysis showed highly significant result in the lipid profile.

Introduction

Dyslipidemia is a disorder of lipoprotein metabolism manifested by elevation of total cholesterol, bad low density lipoprotein (LDL), triglyceride concentrations and a decrease in the good high density lipoprotein (HDL) in the blood. The causes includes faulty food habits, minimum physical exercise, maximum mental and intellectual exercise with stress, anxiety and depression. Every 1% increase in cholesterol level there is 1-2% increase in the incidence of CHD.[1]

There are scattered references available in ayurveda correlating dyslipidemia. Lipids can be correlated to that of medodhatu. Abnormal composition of medodhatu is considered as medo dosa and subsequently as medoroga. It is a condition caused by derangement of agni in general and medodhatvagni in particular leading to improper formation of medodhatu in excess, which subsequently starts accumulating in the srotas resulting into obstruction to the flow of vata.[2]

Medoroga being bahudosa dominant condition, samsodhana cikitsa is preferred. Among these treatments vastikarma is the best treatment for correction of vatadosa, which is the basic factor involved in the pathogenesis of medoroga. In view of this, a randomised clinical study was conducted to evaluate the efficacy of lekhana vasti in dyslipidemia.

Aims and objective:- To evaluate the effect of lekhanavasti in the management of dyslipidemia (medoroga)

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Materials and methods

30 patients who met the inclusion criteria were selected from the Outpatient and Inpatient Department of Panchakarma, National Institute of Ayurveda Hospital, Jaipur, Rajasthan.

Diagnostic criteria

- Abnormal levels of serum lipid profile.
- Clinical features of Dyslipidemia and Medoroga like Ashaktaha Sarva Karmasu, Kshudra Shvasa, Svedadhikya, Utsahahani, Angagaurava

Inclusion criteria

- Serum lipid levels ranging - Serum Cholesterol (201mg/dl or more), Serum Triglycerides (161mg/dl or more), Serum HDL (below 40mg/dl), Serum LDL (131mg/dl or more), Serum VLDL (41mg/dl or more) - all or any of these.
- Patients with clinical features of dyslipidemia and medoroga

Exclusion criteria

Patients below 20 and above 60 years; having other systemic diseases like cardiovascular diseases; associated with any rectal pathology like haemarrhoids and fissure etc. who are not fit for lekhana vasti.

Laboratory investigation: - Routine hematological and urine investigations, lipid profile, liver function test were carried out before and after the treatment.

Assessment criteria:- Complete Lipid profile including serum cholesterol, serum triglycerides, serum HDL, serum LDL, serum VLDL were assessed before and after the treatment.

Lekhana vasti

Lekhana vasti was administered as kalavasti in modified schedule (Table 1). The vasti was administered in the following steps:

Purvakarma

Preparation of the patient: - The patients were subjected to sarvanga abhyanga with Dasamula taila followed by baspasvedana. Then they were asked to have rice with green gram dal in lesser quantity than regular consumption and to attend natural urges and walk a few steps before reaching the vasti room. On the day of niruhavasti, the patients were asked to come in empty stomach. After recording the vitals, the patients were advised to lie comfortably in left lateral position on vasti table with left leg straight and the right leg flexed at knee and hip joints, head resting on left hand with the right hand resting on the right leg.

Preperation of vastidravya

Anuvasana vasti:- 60 ml of Triphala taila[3] was made lukewarm by keeping it in a hot water bath. Then satapuspa curna and saindhava lavana (each 1 gram) added and mixed till a homogenous mixture was obtained; again vasti dravya made lukewarm and administered with enema syringe fitted with rubber catheter (No.08).

Niruhavasti[4]:- Maksika **(**honey - 60 ml), saindhava lavana (5 g), triphala taila (90 ml), yastimadhu kalka (20 g) and triphala kvatha (240 ml), were added and stirred well to get homogenous mixture; andx to which, gomutra (50 ml), yavakshara and Usakadi gana dravya (hingu, tutha, kasisa and silajatu - 2 gram each)

TABLE 1
Vasti schedule

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Vasti	A	N	N	N	A	N	N	N	A	N	N	N	A	N	N	A

A - Anuvasana vasti; N - Niruhavasti

were added. This was administered through vasti putaka.

Observations and result

Of 30 patients, maximum (63.33%) were male and 83.33% in between the age group of 25-50 years. 76.66% patients were married, 53.33% vata-kapha prakriti, 53% krurakostha and 78% non vegetarians. The effect of the treatment in serum lipid profile is shown in Table 2.

Discussion

Dyslipidemia can be studied under the broad umbrella of sthaulya in Brhatrayi. Atisthaulya is at first mentioned by acharya Caraka as one of the kaphaja nanatmaja vikara in the Maharoga adhyaya and later on was elaborated upon in the subsequent Astauninditiya adhyaya. On further contemplation, it is evident that atisthaulya is a physiology predominant disorder which eventually gets converted into a pathological state. The progression from a physiology to pathology is so prompt that it cannot be pointed out distinctly.

Laghutrayi also bears certain references to dyslipidemia. Adhamalla, while commenting on Sarngadharasamhita has tried to differentiate two types medo roga viz. sthaulya and medodosa. According to the distinction made by him, the former is characterized by udaravriddhi whereas the later is characterized by morbid changes occurring due to obstruction of the channels.

TABLE 2
Effect of treatment in Serum Lipid Profile

Lipid profile	BT	AT	p
Cholesterol	267.57±21.15	167.17± 22.10	<0.001
Triglycerides	218.83± 34.25	166.77± 22.00	<0.001
HDL	56.43± 8.26	56.50± 5.06	0.943
LDL	167.70± 14.65	77.27± 19.24	<0.001
VLDL	43.79± 6.87	33.35± 4.40	<0.001

In the present study a modified kalavasti schedule was adopted in order to have maximum lekhana effect; more number of niruha vasti and less number of anuvasana Basti were administered as kala vasti schedule.

The effect of lekhanavasti in serum cholesterol can be studied under the following two headings:

1. Action at the level of liver:- This could be because of the chief drugs of lekhana vasti like honey, triphala, gomutra, yavaksara and usakadi gana dravya which are having kaphahara and medohara activities. This, absorbed by the superior haemorroidal veins, reaches directly to the liver and thereby corrects liver metabolism which reduces the synthesis of cholesterol and increases its excretion, and 2/3rd directly enters systemic circulation through inferior and middle haemorroidal veins resulting into significant availability of drugs bypassing first pass metabolism which may be the cause in reduction in serum level.

2. Correcting vata dosa:- The corner stone in the treatment of reducing cholesterol is inhibiting the action of Acetyl Co-A reductase which may be considered as part of vata dosa. Vasti karma regulates the production and function of vata dosa.

The effects of lekhana vasti in serum triglycerides are due to the following reasons:

The drugs used in vastikarma are mainly medohara (hypolipidaemic) and lekhana in nature hence they reduce the level of triglycerides. Apart from this, the basic causative factor for dyslipidemia (medoroga) is the abnormal movement of vatadosa which

in turn increases the appetite and in turn results in increased calorie intake. Hence, to reduce the calorie intake the corner stone of the treatment could be regulating the movement of vata dosa which was achieved by successful administration of vasti.

The improvement in the serum HDL level after the vasti was observed. Vasti karma corrects the vatadosa which is responsible for the proper transportation of posaka rasa and formation of good quality of dhatu.

Lekhana vasti drugs are having medohara action; it cleanses the channels of transportation and thereby eliminates the accumulated dosa and malarupi medo dhatu, which in turn reduces serum LDL and VLDL levels.

Conclusion

Dyslipidemia is an abnormal amount of lipids in the blood due to impaired lipid metabolism and can be correlated with abnormal medodhatu (medodosa). In medoroga, primarily there is agni vaisamya and vatadusti. Among samsodhana cikitsa, vasti karma is best to correct vatadosa and further it corrects the agni. Lekhana vasti found to be highly effective in reducing the cholesterol level (statistically highly significant).

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REJUVENATING THE AYURVEDA BY THE CURRICULUM REVISION

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Abstract: Every system of medicine directly depends on the old generation, present practitioners including trainers and obviously the future practitioners. The older generations of practitioners have the treasure of validated knowledge acquired through lifelong experience. The attitude of practicing physicians including the trainers towards the system of medicine which they practice in this modern era is very important. The dedication of younger generation or future practitioners to acquire the knowledge is also observed as very important. These three factors have to be considered while revising the curriculum for attaining the goal of the revision. This article aims at highlighting the issue of rejuvenating Ayurveda, one of the most ancient systems of medicine.

Introduction

The curriculum of Ayurveda courses is designed and prescribed by Central Council of Indian Medicine (CCIM). This is in connection with the call for revision of curriculum from both the sides of teaching faculties and students of the system (Apta, October 2013). Revision of curriculum is important to rejuvenate the Ayurveda. The revision must be aimed not only at rejuvenation but also at survival in this modern era of practicing. We know that number of westerners are attracted towards this system of medicines. I came to know by attending a CME conducted by an eminent faculty of a United Sate based University that they are adopting this alternative system of medicine as a complementary one eventhough they won't get any medical reimbursement from the insurance companies due to many including economic reasons. Nearly 40% of the American population has started using alternative systems of medicine based on herbal origin as a complementary and supportive system of medicine. There are also observed some of the adverse effects of the simultaneous usage of medicines both modern and system based on herbal origin. In this modern era also only the Ayurveda practitioner alone may be blamed for such unexpected interactions. This could have avoided by the practitioners of both the systems by knowing the interacting chemistry of interaction between the active content (possibly an alkaloid) of the herbal product and the modern synthetic chemical (pills). But both the practitioners are unaware the structures of not only the active ingredients of their own prescribed drugs but also that of the other

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systems. This supports the inclusion of Chemistry to understand the possible interactions of the active ingredients of Herbal Medicines as well as Modern Synthetic drugs to the curriculum of alternative medicines. In the curriculum of modern medicines they are not at all interested in the structures of chemicals but are interested only in the curing nature and doses of them. The structure learning is not necessary to them as they deal only with the doses of the prescribed drugs. A practitioner of Ayurveda has to learn medicinal chemistry atleast to understand the possible interactions of the active ingredients of their drugs when used as complementary along with the modern drugs. This will help the practitioner to avoid the plausible adverse reactions to the best possible manner.

Curriculum revision board

The members are usually from academic field and usually avoid the presence and participation of traditional practitioners and students of their own systems. Wherever possible in any academic bodies like University syndicate or senate they may fill the vacancies of students by accepting the research scholars most of them belonging to teaching faculty themselves which is really happening in India, the real birth place of Ayurveda. This really denies the opportunity of the real researchers to communicate the real problems to higher bodies. The members of Curriculum Revision Board must be constituted not only from teaching faculty but also from traditional practitioners, students, researchers and from the respective industry. In my personal opinion it should also contain common public representative who have firm faith in the respective system of medicine. The members of curriculum revision boards usually accept the texts based on the classical texts but are of modern in content usually written in English. These texts have many deviations from the fundamental Samhitas that are serious contribution for the propagation of false knowledge and misguidance of the student community who are the future practitioners. I am not neglecting the differences in opinion of fundamental Samhitas themselves those of different schools of Ayurveda.

Preparatory course

The need of a preparatory course is essential as explained in the article written by Prof. (Dr.) Vinodkumar M.V. is advisable. The study of Ayurveda is not a continuation of opted student's present studies and knowledge and hence this bridging course is necessary. This can be easily controlled by the inclusion of Ayurvedic studies at the school level itself. The school curriculum contains health education in which study of fundamentals of Ayurveda and Herbal Medicines could be incorporated in a fruitful manner. This was there in the Gurukula system of education. The preparatory course must contain the Sanskrit language studies to enable the students to understand the basic Samhitas and their authentic commentaries themselves. For this the present style of Sanskrit teaching has to be considerably revised as these learners are not meant for general art studies. The teachings of Sanskrit has to be modified scientifically for the requirements of the subject Ayurveda and allied branches of knowledge viz. Sankhya and Nyaya-Vaiseshika. The knowledge level of the learners has to be enhanced to understand and interpret directly from the Samhitas by reading their commentaries.

Sanskrit language

It is a common belief that Sanskrit studies are not easy and no one can understand effectively the original texts and Samhitas and that can only be understood from the translated works written by experts. While going through the CCIM prescribed syllabus for first professional of undergraduate studies of Ayurveda it is understood that the study of those books for Sanskrit are not meant to develop the skills of the students to learn directly from the basic Samhitas. This could only capable to develop a skill to survive in the society by reciting mere Slokas and stories. I believe it is worthwhile to discuss a method developed by Prof. E.P. Bharata Pisharodi known as Kamadhenu in 1959 at Thirunavaya and successfully applied for a few enthusiastic and dedicated students who wanted to join Ayurveda College for studies within two months. According to the author those students were educated in vernacular media and not even studied Sanskrit and aware of only Devanagari scripts from their Hindi classes. Within the short span of time he made those students experts to understand and follow the classes on Ashtangahridaya, Carakasamhita etc. directly from the original texts. Many of our academicians don't even aware of such methods or such dedicated teachers who served the society. Unfortunately these kinds of Acaryas are not there to guide the students properly and fruitfully by knowing their actual needs. We are also in lack of visionaries like Vaidyaratnam P.S. Varier who established the Arya Vaidya Pathasala at Kottakkal to understand the need of Sanskrit language in our system of Ayurveda education.

Padarthavignana

The preparatory course also should contain the basics to advance level of Padarthavignana to understand the etymology, definitions and concepts correctly beyond any doubt. I am not accepting the view points as presented by the author that the Indian darsanas were flowing baselessly in the Ganges of intellectual arguments. The authors of the darsanas were not tried to complicate the views but tried to give authenticity beyond doubts to define the terms that they use in their common parlance. They tried to convey and wrapped the knowledge completely in those simple terms very lightly and beautifully as we all know the definition of sutra method. This we can understand if we study them in a traditional way that we lost during these days. I am not agreeing to the author's view points on Varunaloka and Adithyaloka, etc. as explained in the article. There is no need to give pseudoscientific bases to a scientific truth as all we know. This shows the lack of Sanskrit knowledge to the governing authorities of such classes. These lokas are not special imaginary lokas with their existence in some other world. For clarification I would like to explain a little. While explaining the characteristics of earth (Prithvi) the author of Tarkasamgraha states Sareeram asmadadeenam and not Sareeram prthiveeloke. This has high forensic values as the quality of earth is smell and our bodies have characteristic smell quality of earth incorporated to our bodies. It is clear if we read the Sanskrit commentary of Annambhata in which he clearly states that Gandhavachhareeram parthivasareeram. Similarly in case of water Sareeram varunaloke I am stating the explanation. The definition of water is that which has cold touch. This is only possible when there are at least traces of water on the body (Jalasambandhadeva sitasparsamanam). As we know the taste can

only be understood in presence of water. This shows the body of water is in the Varunaloka which is not a world out of this material world. The lord Varuna is the deity of water and wherever water is there the deity can rule that area. Similarly the Adityaloka has to be understood scientifically. The definition of light is that which has hot touch. This has four kinds of objects earthy (Bhauma), heavenly (Divya), gastric (Audarya) and mineral (Akaraja). In this earth it is as Agni, in heavenly bodies it as lightening, in gastric variety it as the cause of digestion and in minerals it as gold like. The modern sciences also accept the fire, lightening, etc. as plasma the fourth states of matter and the pure plasma is situated there in stellar bodies like sun (Solar region). This is very evident from the Sanskrit commentaries and purely scientific in nature. This shows the need of immediate enhancement of Sanskrit knowledge among faculties to propagate the correct information to the students or future practitioners.

Samhita studies

We can observe many basic differences in the Samhitas regarding the basic concepts. For example the possible types of vipaka are only two viz. svadu and katu according to Dhanwanthari tradition and are three viz. Madhura, Amla and Katu according to Atreya tradition. Each of these traditions has their own supporting arguments and is true according to them. It is better to avoid the intermixing of these two by dividing the curriculum to two groups at the bachelor course itself. This will help the students to understand the very fundamentals in a better way. Most care have to given in selecting the texts for studies. Let them be the original Samhitas and their authentic commentaries written in Sanskrit. Each group has to study the respective Samhita completely according to their elective in undergraduate course. To understand the Samhitas we have to include the relevant portions of Vedas along with their authentic Sanskrit commentaries. There may be difference in opinion regarding the bhutavidya and magical remedies as explained in Samhitas. Along with Samhitas the texts like Ayurveda Sutram has to be studied as they can help the students to understand completely their subject studies.

Nadivijnam and jyotisham

The CCIM syllabus of second profession includes pulse diagnosis but has to be more elaborative one to make the students experts in this field. I know this is not easy to teach it in an elaborative manner as the lack of experts and evidences. The basics of medical astrology have to be included in the syllabus. This has to be rejuvenated with prime importance as the times need.

Yoga studies and naturopathy

The practical studies of yoga have to be included in the Swasthavritta studies of second professional. This can also include the studies of pranayama and simple breathing exercises. These will help the future practitioners to handle their practices effectively by incorporating the yoga and breath exercises along with medicines. The naturopathy has to be well incorporated to the syllabus with practical knowledge. The uses of common herbal medicines and remedies have to be included.

Inclusion of modern subjects

Modern subjects like medicinal chemistry have

to be included in the syllabus to understand the active ingredients and their possible interactions with the modern allopathic drugs. This will enhance the learners to handle the situations of complementary use of herbal medicines effectively. Detail evidence based case studies have to be included. Include more diagnostic methodologies as par with modern medicines. It will be better included the emergency handling methods based on herbal medicines that has to be recollected and developed to the maximum possible manner. Include study of Information Technology and its application to the field of alternative medicines.

Ambiguities in teachings

If a teacher wants to make a student or learner expert the teacher has to be aware of the subject matter. If he is not aware completely regarding the subject he confuses students and obviously those who start thinking has not able to jump the hurdles and those who are not thinking are able to jump the hurdles of the examination set by these experts. We can observe many students who are academically brilliant (according to the faculty) are not able to handle the medical situations but the average student handles situations professionally. Do not underestimate the students as they elected this subject wholeheartedly to learn (exemptions may be there) and this is the duty of the teachers to quench their thirst by providing the correct knowledge. The author states that the postgraduate student merely references his undergraduate first professional study notes to his examinations. I do not personally believe it as a wrong as the relevant portions comes under the syllabus of postgraduate examination. Please remember that Ayurveda samhitas are very ancient ones and even stands without any damage in this modern era of modern medicines. The Tridosha siddhanta and Panchaboutika approach cannot be changed whatever ancient they may be. I would like to remember the views of Vaidyaratnam P.S. Varier regarding the curriculum revision and his steps for the same by writing the anatomy books like Ashtangasareeram and later Brihat Sareeram in Sanskrit language for the propagation of Ayurveda. I also would like to remember this was much earlier than when Kerala Government introduced a unified syllabus for the Ayurveda courses allover Kerala.

Conclusion

As a conclusion I would like to suggest these points.

1. Do not underestimate the learners of the alternative systems like Ayurveda, Unani, Siddha and Homoeopathy.
2. The constitution of Syllabus Revising Boards must be scientifically constituted with the inclusion of experts from different fields.
3. The preparatory course has to be well designed to understand the terminologies and method.
4. Sanskrit studies have to be revised to make the students of Ayurveda to understand the original Samhitas and authentic Sanskrit commentaries directly.
5. The electives like Dhanwanthari System and Atreya System has to be introduced in the undergraduate level itself.
6. Modern subjects like medicinal chemistry have to be included.
7. The ambiguities in the teachings have to

be avoided by understanding the subject.

8. Introduce the basics of alternative systems and common herbal remedies in the school curriculum itself to protect the knowledge and information of the old generations.
9. Include the study of Information Technology and usage of Ayurvedic Software.

The trainers and faculty of Ayurveda have to increase their knowledge of Sanskrit at the earliest before presenting the subject matter. This is further evident from many of the research articles published by the research faculties of Ayurveda. I believe by doing such revisions alone can make the fruitful changes in this field. I wholeheartedly support many of the views presented by a second professional student in his article and understand the vision of such noble hearts. This shows that the youth and students are not useless but USED LESS and are the light to LIGHT to attain good exposure and knowledge. I believe it is the duty of the teachers to convey correct information and knowledge to the learners and it is the right of them to get correct education.

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PREVENTIVE AND CURATIVE ASPECTS OF PSORIASIS - AN AYURVEDIC PERSPECTIVE

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Abstract: Psoriasis can be correlated to different varieties of kushta (skin diseases) like eka kushta, kitibha kushta or sidhma kushta due to the semblances of signs and symptoms. The etiological factors explained for kushta can be classified as aharaja nidana, viharaja nidana and sadvritta apalana. Each nidana plays an important role in the manifestation of the disease. As ayurveda emphasizes nidana parivarjana as the first line of treatment, it is essential to prevent the manifestation of the disease and further to check its progression through pathya and apathya which are the unique contributions of ayurvedic science. Here is an attempt to throw light on preventive and curative aspects of psoriasis through lifestyle management.

Overview

Psoriasis is a one of the most common dermatological problems of unknown etiology. It is a chronic, genetically determined, inflammatory and proliferative disease characterized by dry, well-circumscribed, silvery scaling papules and plaques, present over extensor surfaces and scalp of various sizes with spontaneous remission, relapse and seasonal variation.[1] Its prevalence in different population varies from 0.1%-11.8%.[2] The pathogenesis of psoriasis involves both genetic predisposition including the influence of genes of the Human Leucocyte Antigen Complex and T-Cell mediated immunological mechanisms.[3]

In ayurveda, all the skin diseases are commonly described under the term kushta. The word kushta means that which makes one's skin disgraceful look. Due to mithyahara, vihara and karma, the tridoshas get vitiated affecting the tvak, rakta, mamsa and ambu dushyas, thus produces kushta. It is noted as one of the asta mahagada.[4]

Though the contemporary science does not explain specific cause of manifestation of psoriasis, ayurveda has clearly described the causes leading to kustha[5i] i.e. aharaja, viharaja nidanas, sadvritta apalana and also emphasized that, impeding these nidanas, and following the pathya could help the future generations to avoid kushta and also to check its progression and remission for those already afflicted with.

The etiological factors of psoriasis (kushtha) may be classified into following groups: a) aharaja – diet and dietetic pattern, 2) viharaja – faulty lifestyle and c) sadvritta apalana/

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acararasayana/kulaja nidana - not following the code of conduct, genetic predisposition.

1. **Aharahetu (dietary causes)**
The main causative factor of psoriasis (kushtha) is viruddhahara and mithyahara (incompatible and improper diet). Aharaja nidana can be divided as follows:

- Type of food
- Quantity of food
- Quality of food
- Food incompatibility
- Faulty dietetic habit

Skin - GIT relation:- According to Samitz M.H. there are two types of relationship between skin and gastrointestinal track:[6] a) Embryonic and b) Biochemical

Embryogenic relationship:- Skin and GIT have a common origin from the embryoblast. As the development precedes the cranial end of foregut and the blind caudal end of the hindgut, eventually shares on ectodermal component. The former gives rise to oral epithelium and the later to the epithelium of the lower part of the anal canal. Thus, many skin disorders concomitantly involve gastrointestinal membrane and epithelium, including all connective tissues. The dermis and sub-mucosa of gut arises from mesenchymal cell. The glandular part of the skin and GIT develops from common histogenic process.

Biochemical relationship:- Skin disease can be caused by the primary disturbance of common biochemical mechanism, or can be secondary to general metabolic alterations, induced by dysfunction of these systems.

Atyasana
Atyasana[5i] i.e. taking excessive amount or constant usage of certain foods like navanna (new formed rice); guru anna (heavily digestible foods), amlarasa (citrus fruits), dugdha (buffalo milk), dadhi (curd), matsya (fish), guda (jaggery), tila taila (unrefined sesame oil), kulattha (horse gram), masha (black gram), nishpava (field beans), ikshu pishta [food articles (sweets) prepared by sugars), Pishta-Vikara (carbohydrate rich foods)] is a causative factor of kushta.

Mithyahara
Improper food habits are another major causative factor. There are certain codes of conducts of eating which, when not followed, is called mithyahara (Vijayaraksjitha). The codes of conduct of eating is termed as "astaharavidhi visesa ayatani".[5ii]

Virudhahara
'Viruddha' or "vairodhika' is the technical term for incompatible or antagonistic. All substances which act as antagonist to normal dhatu (tissues) of the body are to be regarded as 'viruddha'.[5iii] According to ayurveda, ahara can sometimes become fatal just like poison and in some case, it may become garavisa (artificial poisoning) in long run.[7i] As per the classics, some type of food combinations that directly produce the disease kustha are:

a) Fish with milk. It is the example of samyoga and virya viruddha.

b) Gramya, anupa or audaka mamsa with milk. It makes samyoga viruddha. Diet consisting mostly of cereals like hayanaka, yavaka, canaka, uddalaka, kodrava, kola, kulattha, masha, atasi or kusumbha with milk, curd, butter milk are viruddha - Caraka.

Visamasana
Taking food at irregular time is called visamasana. Visamasana is best known to produce visama agni.[5iv]

Asatmyahara

Taking food which is not homogenous and not pertaining to the person is called asatmyahara.[5v]

Ajirne adhyasana

Intake of food in state of indigestion is called ajirne anna. According to acharya Caraka, taking food in state of indigestion is best known to cause grahanidusti.[5iv]

2. **Vihara hetu**

All kinds of activities done physically, vocally or mentally are considered as vihara. Mithya vihara means improper activities. The activities opposite to svasthavrtta (personal health maintenance activities) are mithya vihara. Mithya vihara[5vi] is the chief causative factor of many diseases but it has been considered as the main cause of kustha.

Apathya vihara

Divasvapna (day sleep), atimaithuna (excessive sexual intercourse), vegadharana (suppressing the natural urges), papakarma (sinful acts), atapa sevana (excessive exposure to sun rays), svedana (sudation) are better to be avoided. Ati-dhukha (excessive worry/grief) and ativyayama (excessive physical exercise) are also not good.[5i]

3. **Acara hetu (behavioral factors)**

Behavioral misconduct, antisocial activities, sinful activities and other punishable activities come under this heading.[5i]

All these are the nidana of kustha. Discontinuation of the apathya (unwholesome drugs and regimen) and follow the pathya-related ahara, vihara and sadvritta palana as explained below are helpful to prevent the disease or to arrest its progression.

Pathyahara:- Carakasamhita defines 'pathya' as the wholesome drugs and regimen which do not adversely affect the body and mind.[5vii] It mentions that the patient has to consume laghu anna (light food), tikta saka (bitter vegetables), purana dhanya (old cereals and grains), jangalamamsa (unsaturated animal fat), mudga (green gram), patola (snake guard), purana sali (old stored rice), shastika sali (a variety of rice explained in ayurveda), yava (barley), godhuma (wheat), food and ghee prepared with triphala (haritaki, vibhitaki and amalaki) and nimba (neem). Khadira jala pana (drink prepared from the extract of *Acacia catechu*), and aushadha samskrta takra (medicated buttermilk).

Pathyavihara:- They are the wholesome drugs and regimen which do not adversely affect the body and mind.[5vii,5viii] Abhyanga with karanja (*Pongamia pinnata*) taila; pariseka (type of medicated bath wherein water is sprinkled on the body); avagaha (bath) with khadira (*Acacia catechu*) decoction; brahmacarya (control in carnal desires); ksapasaya **(**sleep at night only); vegavarodha varjana (to avoid suppression of natural urges); uccha vachan varjana (to avoid loud speaking); soka, krodha varjana (to avoid anger or anxiety); hima atapa varjana (to avoid exposure to excessive heat or cold); pravata varjana (to avoid walking in open air); vyayamavarjana (to avoid vigorous exercise); yanadhva varjana (to avoid journey or excessive walking); samsthita (use of suitable posture); dhuma-rajasi varjana (to avoid fume and dust); divasvapna varjana (to avoid day sleeping); ratri jagrana varjana (to avoid stay up in the night) - all these come under this category.

Acara rasayana/sadvrtta palana:- The following are the code of conduct.[5ix]

- Dinacarya (daily regimen)
- Mukha praksalana (face washing) - twice a day.
- Abhyanga/udvartana (massage daily)
- Vyayama (proper exercise)
- Snana (daily bath)
- Dinacarya (avoid day sleep or sleep soon after intake of food)
- Ratricarya (have dinner at appropriate time)
- Rtucarya (observe and follow the seasonal regimens)

Discussion

The pathogenesis and etiological factors of psoriasis can be summarised as follows:

Caraka describes that atimatra asana is amapradosa hetu. Food taken in excess and at improper time leads to dushti in annavahasrotas and disturbs the process of food digestion. Lavana provokes pitta, increases the blood, aggravates rakta, disperses the dermatic lesion, depletes the muscle tissue.[5x] The others are – a) madhura - ama, ajirna; b) amla - raktadustikara, raktaprakopaka, mamsa saithilya pittavrddhikara, suppuration of wounds[5xi] c) anupaudaka mamsa - guru, snidgha,[5xii] picchila, abhishyandi, agnimandya kara (Bhavaprakasa); d) tila - pittaprakopa, kushthakara; e) guda (jaggery) - krimikara, medakara, agnimandyakara, kaphakara; f) navanna -kledakara, abhishyandi, vistambhakara; g) dadhi – maha abhisyandi, kaphakara, kusthakara; h) dravanna - kledakara; i) matsya - bahudoshakara; j) pistanna - guru.

Intake of viruddahara (incompatible diet) vitiates agni. Indigested food materials turns sour and acts like a poison, which is called amavisha.[5xiii] This provokes tridosha.[7ii]

Intake of viruddahara vitiates srotas. In general, food substances and activities which are similar in quality to the body humors and deleterious to the body elements, vitiate the body channels.[5xiv]

Fish with milk is the example of samyoga and virya viruddha. Samyoga viruddha is more dangerous than others. Both milk and fish are madhura, have madhura vipaka and are maha abhisyandi. However, milk is sitavirya while fish is usnavirya. Due to incompatibility at the level of virya, when taken together, it causes raktadusti and due to maha abhishyandi property, it obstructs the srotas.[5xv]

Mithyahara deranges the power of jatharagni and also cause dushti of grahani. As grahani is also dushita, ama undergoes putrification and amavisha is produced.[5xiii] So due to ama, amavisha, and grahani dushti, other diseases may coexist along with kustha.

Visamasana is best known to produce vishamagni.[5iv] Taking food in state of indigestion is best known to cause grahani dushti.[5iv]

Taking excessive guru, snidgha ahara produces dusti in rasavahasrotas.[5xvi] Caraka describes gurubhojana durvipakakaranam.[5iv] Guru ahara also causes dusti of mamsavahasrotas.[5xvii] Excessive drava causes dusti in raktavahasrotas.[5xviii]

All these aharaja nidanas have to be avoided and the pathyahara which consists of laghu anna (light food articles), tikta saka (bitter vegetables); those items having laghu, ruksha, ushna gunas; tikta, katu rasa pradhana dravyas and items that are kushtaghna in property have to be consumed.

Viharaja nidana such as abrahmacharya, divasvapna, vegavarodha, uccha v a c h a n (loud speaking), soka, krodha, etc. disturb the normalcy of body humors and manifest the

disease.

The achara nidanas explained bring about psychogenic stress which is of prime importance in the pathogenesis of psoriasis. Due to raja and tama (mental humours), the manas always desires materialistic pleasures and to satisfy, it does good/bad deeds. And as the after-effects, he/she suffers from diseases like kustha.

Hence these nidanas have to be checked and sadvrtta have to be followed which bring about the normalcy in raja and tama, thus smoothening the stress by improving the satvikadosa.

Conclusion

Of all the organs, nothing is more easily inspected or exposed to infection, disease or injury than the skin. Because of its visibility, skin reflects our emotions and some aspects of normal physiology. Changes in skin colour may indicate homeostatic imbalances in the body. Many interrelated factors including nutrition, hygiene, circulation, age, immunity, genetic traits, psychological state, and drugs affect both the appearance and health of the skin. So important is the skin to one's image that people spend much time and money to restore skin to a more normal or youthful appearance. In ayurveda, almost all skin disease can be taken under generalized term kustha. The word kustha is a broad term, which covers almost all the skin diseases.

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EFFECT OF BRAHMYADI YOGA IN THE MANAGEMENT OF MANODVEGA (GAD) – A CLINICAL STUDY

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Abstract: A clinical study was conducted to study the effect of Brahmyadi yoga on patients of Manodvega (Anxiety neurosis) at Advanced centre for Ayurveda in Mental Health and Neurosciences, NIMHANS Bangalore. 23 patients, aged between 16 to 60 years, were selected from the O.P.D and assigned into a single group. Cap. Brahmyadi yoga was administered in the dose of 1 cap (500mg) thrice a day for 6 months. Assessment was done based on the improvement in ayurvedic clinical parameters and Hamilton anxiety rating scale. Patients showed good response by 65% (15), fair response by 35% (08). No patient found to have any adverse effects.

Introduction

Life is a conglomeration of sarira, indriya, satva, and atma. Any of these cannot be isolated and studied separately. Seers of ayurveda express that the term sarira refers to body including five senses and mind. The influence of mind cannot be ruled out in origin, existence or cure of any condition of any disease. When allowed to persist for long time the psychic and somatic disorders get combined with each other.

Manodvega is one of the manasikavikara mentioned in ayurvedic literature. The symptoms of this disease are mostly similar with that of Generalized Anxiety Disorder (GAD). GAD is a disorder characterized by presence of unrealistic or excessive anxiety and worry, accompanied by symptoms of four categories: i) motor tension, ii) autonomic hyperactivity, iii) vigilance and scanning and iv) apprehensive expectation. The anxious mood must continue for at least a month to confirm the condition as GAD.

Ayurvedic principles consider man as integrated one to treat mental disorders effectively. Medhyarasayanas and satvavajayacikitsa are such measures, which can be utilized effectively for the treatment of cittodvega/manodvega.

In manodvega, when the mind is afflicted with anxiety, it leads to fear/worry, apprehension, depression, psychological arousal as anger and irritability. Ultimately disturbances in personal, familial and social harmony occur.

Anxiety disorders are among the most prevalent psychiatric condition in the world. Further, studies have persistently shown that they produce inordinate morbidity, utilization

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of health care services, and functional impairment. Recent studies also suggest that chronic anxiety disorder may increase the rate of cardiovascular-related mortality. Hence, it is necessary to make proper diagnosis of anxiety disorder before initiate the treatment.

Psychopathology in ayurveda:- Scriptures of ayurveda have mentioned the 'abnormal status of mind', i.e. psychopathology in various contexts. Caraka states that raja and tama are chief pathogenic factors of the mind that cause many manasika vikaras. Manodvega can be defined as a manas (mind) + udvega (anxiety) i.e. 'anxious state of mind'. Hence, manodvega is the perfect word for highlighting the condition of anxiety state.

Nidana (etiology) of manodvega:- The main dosas of the manas are raja and tama. Hence the nidanas, which vitiate raja and tama, may be considered as etiological factors of manodvega. The following three factors are responsible for all physical and mental diseases: i) prajnaparadha, ii) parinama and iii) asatmendriyarthasamyoga.

Aim and objective:- To evaluate the anxiolytic effect and safety of Brahmyadiyoga in patients of manodvega.

Materials and methods

The study was conducted at OPD level during 2005-2008 at ACAMH & NS, NIMHANS, Bangalore. The trial drug was chosen by the CCRAS Head Quarters, New Delhi and studied according to the Council's guidelines. The drug was supplied by the Council's pharmacies.

Trial drug:- The composition of Brahmyadiyoga are: i) brahmi [*Centella asiatica* (L.) Urban], ii) vaca (*Acorus calamus* Linn.), iii) sarpagandha (*Rauvolfia serpentina* Benth ex. Kurz), iv) kustha (*Saussurea lappa* C.B. Clarde), v) tagara (*Valeriana wallichi* D.C.), vi) jatamamsi (*Nardostachys jatamansi* D.C.).

Treatment:- Total 23 patients, who met the inclusion criteria, were treated with Brahmyadi yoga at a dose of 500 mg T.I.D. with water daily for a period of six months. The follow up was done every 2 months i.e. at the end of 2nd, 4th and 6th month.

Inclusion criteria

- Age between 16-60 years of either sex
- Presence of cardinal features of manodvega
- Onset between 8 weeks to 2 years
- Ambulatory and co-operative

Exclusion criteria

- Duration of the disease - below 8 weeks and above 2 years
- Exhibiting psychotic symptoms
- Factors interfering with concentration and communication
- Hypertension, diabetes or any other systemic diseases

Routine examination: - Detailed clinical and social history was taken. The patients were assessed on the basis of clinical parameters and Hamilton's anxiety rating scales

Assessment criteria

Statistical analysis:- Scoring was given to the clinical parameters and Hamilton's anxiety rating scale (Table 1) and the improvement was assessed based on the statistical methods.

Criteria of gradation:- None - 0, mild - 1, moderate - 2, severe - 3, grossly disabled - 4. Each question was scored 0 - 4. A total score of 0 - 17 was considered as mild, 18 - 25 as moderate and 26 - 30 as moderate to severe.

TABLE 1
Clinical parameters & Hamilton's anxiety rating scale

Parameters
I. Ayurvedic parameters:
1. Bhaya (fear)
2. Asthairya (indecisive)
3. Vepathu (tremor)
4. Hrthkampa (palpitation)
5. Sighrakopa (short temper)
6. Svedabahulyata (excessive sweating)
7. Trsna (excessive thirst)
8. Mukhasuskata (dryness of mouth)
9. Urojadyata (heaviness in the chest)
10. Urasula (chest pain)
11. Anavasthitachitta (restlessness)
12. Svasakrchata (dyspnoea)
13. Anidra (insomnia)
14. Daurbalya (weakness)
15. Udarasula (abdominal pain)
16. Udaradaha (burning sensation in abdomen)
17. Adhmana (flatulence)
18. Malavikrti (constipation/diarrhoea)
19. Mutrabahulyata (polyurea)
20. Sira sula (headache)
21. Brama (vertigo)
22. Utklesa (nausea)
II. Hamilton anxiety rating scale
1. Anxiousness
2. Tension
3. Fears
4. Insomnia
5. Depressed mood
6. Somatic (muscular)
7. Somatic (sensory)
8. C.V.symptoms
9. Respiratory symptoms
10. G.I. symptoms
11. Genitourinary symptoms
12. Autonomic symptoms
13. Behavior at interview
14. Intellectual (cognitive)

Total score above 30, though rare, is indicative of very severe anxiety.

Observation and results

Majority of patients (39.1%) fell in between 26-35 years of age group whereas 30.4% cases were between 16-25 years, 26% cases between 36-45 years and 4.3% cases were above 45 years. Distribution of patients according to age, sex and prakrti is shown in Table 2.

TABLE 2
Distribution of patients according to age, sex and prakrti (n = 23)

Description	No. of patient	%
1. Age group (in yrs)		
- 16-25	7	30.4
- 26-35	9	39.1
- 36-45	6	26
- 45-60	1	4.3
2. Sex		
- Male	14	60.9
- Female	9	39.1
3. Prakrti		
- Vatakapha	4	17.39
- Pittakapha	4	17.39
- Vatapitta	15	65.2

Marked decrease found in ayurvedic clinical parameters such as bhaya (fear), asthairya (indecisive), vepathu (tremor), etc. (Table 3). The overall improvement in clinical parameters was highly significant statistically. Hamilton anxiety rating scale showed considerable decrease in anxiousness, tttttension, fffear, insomnia, etc. (Table 3). The results based on Hamilton anxiety rating scale showed statistically highly significant. The overall score pattern was statistically highly significant (Table 4).

TABLE 3
Effect of therapies on clinical parameters and based on Hamilton Rating Scale for Anxiety

Parameters	Mean score		% of diff.	Mean diff.	SD (+)	SE (+)	't' value
	BT	AT					
I. Ayurvedic parameters:							
1. Bhaya (fear)	3	1	66.7	2	0.59	0.139	14.3
2. Asthairya (indecisive)	2.7	1	63	1.7	0.50	0.152	11.1
3. Vepathu (tremor)	2.4	1	58	1.4	0.51	0.148	9.4
4. Hrtkampa (palpitation)	2.8	0.9	68	1.9	0.44	0.1	19
5. Sighrakopa (short temper)	2.7	0.8	70.3	1.9	0.65	0.15	12.6
6. Svedabahulyata (hyperhidrosis)	2.8	0.9	68	1.9	0.53	0.142	13.3
7. Trsna (excessive thirst)	2.3	0.4	82.6	1.9	0.78	0.26	7.3
8. Mukhasuskata (dryness of mouth)	2.7	0.5	81.4	2.2	0.52	0.128	17.1
9. Urojadyata (heaviness in the chest)	2.8	0.7	75	2.1	0.60	0.145	14.4
10. Urasula (chest pain)	2	0.5	75	1.5	0.52	0.157	9.5
11. Anavasthitacitta (restlessness)	2.9	0.8	72.4	2.1	0.65	0.139	15.1
12. Svasakrchata (dyspnoea)	2.3	0.7	69.5	1.6	0.51	0.182	8.7
13. Anidra (insomnia)	2.6	0.3	88.4	2.3	0.57	0.144	15.9
14. Daurbalya (weakness)	2.5	0.6	76	1.9	0.76	0.175	10.8
15. Udarasula (abdominal pain)	2.6	0.8	69.2	1.8	0.44	0.2	9
16. Udaradaha (Hyperacidity)	2.6	0.6	76.9	2	0.63	0.158	12.6
17. Adhmana (flatulence)	2.5	0.5	80	2	0.60	0.174	11.4
18. Malavikrti (constipation/diarrhoea)	2.2	0.4	81.8	1.8	0.64	0.194	9.2
19. Mutrabahulyata (polyurea)	2	0.3	85	1.7	0.51	0.182	9.3
20. Sirasula (headache)	2.4	0.8	66.6	1.6	0.48	0.105	15.2
21. Bhrama (vertigo)	1.8	0.1	94.4	1.7	0.51	0.210	8
22. Utklesa (nausea)	2.3	0.5	78.2	1.8	0.44	0.146	12.3
II. Hamilton Rating Scale							
1. Anxious	3.2	1.1	65.6	2.1	0.66	0.139	15.1
2. Tension	3	0.9	70	2.1	0.51	0.108	19.4
3. Fears	2.9	1	96.5	2.8	0.55	0.134	20.8
4. Insomnia	2.5	0.3	88	2.2	0.68	0.157	14
5. Intellectual (cognitive)	2.8	1.1	60.7	1.7	0.70	0.176	9.6
6. Depressed mood	2.9	1.1	62	1.8	0.63	0.154	11.6
7. Somatic (muscular)	2.6	0.8	69.2	1.8	0.50	0.115	15.6
8. Somatic (sensory)	2.3	0.7	69.5	1.6	0.50	0.140	11.4
9. C.V. Symptoms	2.8	0.9	67.8	1.9	0.63	0.154	12.3
10. Respiratory Symptoms	2.4	0.4	83.3	2	0.5	0.166	12
11. G.I. Symptoms	2.5	0.5	80	2	0.55	0.134	14.9
12. Genitourinary Symptoms	2	0.4	80	1.6	0.51	0.182	8.7
13. Autonomic Symptoms	2.4	0.7	70.8	1.7	0.45	0.118	14.4
14. Behavior at interview	2.5	0.9	64	1.6	0.74	0.199	8

* $p = <0.001$

TABLE 4
Overall results (n=23)

Result	No. of patient	%
- Good response	15	65
- Fair response	08	35
- Poor response	00	00
- No response	00	00
- Death/drop-out/LAMA	00	00

Good response = >75% - <100%
Fair response = >50% - <75%
Poor response = >25% - <50%
No response = <25% improvement

Discussion

Manodvega/cittodvega is one of the 80 nanatmajavatavikara. Both vata and manas play an important role in the manifestation of manodvega. As vata manas are interdependent, if one gets vitiated it affects other adversely.

According to acarya Caraka, medhya rasayanas are used to promote mental health and to treat disorders like manodvega. Hence Brahmyadi yoga was selected in the study. Ayurveda has

TABLE 5
Pharmacodynamic properties of Brahmyadiyoga

Name of drug	Rasa	Guna	Virya	Vipaka	Prabhava	Karma
1. Brahmi	Tikta	Laghu, sara	Sita	Madhura	Medhya	Tridosagna, sodhahara, vedanasthapana, visagna, medhya, samaka, aksepahara, dipana, pacana, anulomana, raktasodhaka, kaphagna, mutrala, artavajanana, svedajanana, kusthagna, kandugna and ama pachana.
2. Vaca	Katu,	Laghu, tiksna sara	Usna	Katu	Medhya	Kaphavatasamaka, kanthya, medhya, samaka, sangnasthapana, vedanasthapana, krimighna, arsoghna, anulomaka, kasasvasahara, sulaghna, vamaka, dipana, mutrajanana, aksepasanana, svedajanana and jvaragna.
3. Sarpagandha	Tikta	Ruksa	Usna	Katu	Nidranasa	Kaphavatahara, nidrajanana, jvaraghna, visaghna, krimighna, useful in nadivikara, apasmara, unmada, agnimandya, udarasula and raktavikara
4. Kusta	Tikta Katu Madhura	Laghu Ruksa Tiksna	Usna	Katu	-	Vatakaphahara, sukrala, useful in kustha, visarpa, vatarakta.
5. Tagara	Tikta, Katu Madhura	Laghu, Snigdha Sara	Usna	Katu	-	Visapasmara sulaksi roga dosayapaham
6. Jatamansi	Tikta, Kasaya Madhura	Laghu, Tiksna Snigdha	Sita	Katu	Bhutagna (manasa dosahara)	Tridosagna, dahaprasamani, kustha visarpaghna and useful in rakta vikaras.

mentioned rasayanatantra as the seventh clinical discipline. Different classics have defined rasayanatantra in different ways but with same central idea. Acarya Susruta has mentioned the aim of rasayana as four-fold viz. i) longevity, ii) maintenance of positive health, iii) improvement of three mental faculties of intelligence, perseverance and memory and iv) resistance against diseases.

The rasayana therapy in general has a relevance to both the healthy (kamyarasayana) and the ailing (naimittikarasayana); the emphasis on these two aspects is varying. However, in our present society curative medicine still has the priority over the positive health programmes and hence the naimittikarasayanas are of greater value.

Brahmyadi yoga has properties (Table 5) to pacify both saririkadosa (vata) and manasikadosa (rajo) which are the major dosas involved in pathogenesis of manodvega. The combinations of herbal drugs in Brahmyadi yoga are basically mentioned as medhyarasayanas in ayurvedic classics. Due to their medhya rasayana property these drugs act at the level of rasa by enriching the nutritional value of the medha and thereby increase the stress tolerance of the patients suffering from manodvega (anxiety neurosis).

Conclusion

On the basis of clinical observations, it may concluded that the Brahmyadi yoga is basically a medhyarasayana and it can be prescribed as a safe, effective and useful drug in patients suffering from manodvega (anxiety neurosis).

Acknowledgement

The authors are grateful to the Director General, CCRAS, New Delhi for providing necessary facilities, continuous support and encouragement for the innovative research.

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FEASIBILITY OF MADHUTAILIKA YAPANAVSTI IN OUTPATIENT POPULATION AND ITS EFFICACY AGAINST PLACEBO AND AKARAKARABHADI YOGA IN PREMATURE EJACULATION - A CLINICAL STUDY

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Abstract: Yapanavasti is a modification of vasti therapy. As per classics this modality of vasti is suitable for outpatient population. It can be employed without any specific diet or restriction of activities. The present study aimed to assess the feasibility of yapanavasti in OPD population suffering from premature ejaculation and to measure post vasti parameters like retention time, number of vega, extent of evacuation and its effect on biological factors like digestion, bowel movements and physical strength. The efficacy of yapanavasti in improving ejaculatory performance was also compared against placebo and Akarakarabhadi yoga.

Introduction

Vasti (therapeutic enema) is a unique treatment modality in ayurveda. It is explained as the best treatment for management of vitiated vata. It is considered as possessing multifarious and broad spectrum clinical utility. Now a days, vasti therapy is regularly practiced for subjects of inpatient department. Physicians consider hospital admission as essential for conducting vasti therapy because of potential complications. Ayurvedic classics also detail many complications for improperly conducted vasti.[1] Moreover, 8 important impediments like jolting by traveling in vehicles, wayfaring, constant sitting, day sleeping, sexual act, etc. are explained for all panchakarma including vasti.[2] Routinely, vasti decoction is employed in forenoon in empty stomach. Hot water bath and meals are advised just after the procedure. Enema material is expected to return within one muhurta (approximately 48 minutes) and if not so complications are possible. The above said facts restrict vasti as a therapeutic option for subjects of outpatient department.

Yapanavasti is a modification of vasti therapy taking into account of the various inconveniences of the present life style. Yâpanavasti is an intervention having many advantages in preparation, application and efficacy. Yapanavasti is also known as yuktaratha vasti. As the patient can travel even after the administration of vasti on the chariots, back of elephants or horses it is called as yuktaratha. These are normally strictly contraindicated in vasti therapy as it causes samkshobha (irritation and complications). This characteristic of yâpanavasti makes it applicable to outpatients without hospitalisation

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Madhutailikayâpanavasti contains equal quantity of madhu (honey) and taila (sesame oil). Mâdhutailikavasti is a mild decoction type of enema. It is not either absolute lekhana (depleting) or brimhana (nourishing).[3] It does not cause vâta vitiation as supposed in case of nirooha by continuous use even though serves the purpose of evacuation. Due to the same facts there is no need of administration of snehavasti (oil enema) in between mâdhutailikavasti.[4] Mâdhutailikavasti is generally indicated for king, businessmen, ladies, tender persons, old age, children, diseased as well as healthy persons and those who undergo excessive sexual act.[5] This reference ensures the suitability of application of Mâdhutailikavasti for all strata of society irrespective of status, job, age and sex. Mâdhutailika vasti is applicable in lesser quantities also.[6]

It is having broad spectrum efficacy and no complications. There are no specific don'ts or prohibitions while administering madhutailika. No restriction for traveling in vehicle, sexual act and intake of food articles.[7] The vasti can be given at any time according to the wish of the patient.[7] It is indicated in all seasons and in all diseases.[8] As mâdhutailika is a type of niroohavasti the maximum time of retention is one muhoorta (48min). Yâpanavastis are indicated for maximum 10 days.

The efficacy of yapanavasti in the management of sexual dysfunctions are tried and proven to be significant by many scholars even though published data are less. There are no previous published reports of the trial of yapanavasti exclusively in outpatient population.

Considering the above facts a clinical study was planned to find out the utility as well as feasibility of Madhutailikayapanavasti in subjects of out patient department. Patients suffering from genuine premature ejaculation were selected for the trial. Premature ejaculation is described under sukragatavata. Yapanavasti are explained to be ideal for managing diseases pertained to sukradhatu. Since premature ejaculation is a clinical condition that has strong psychological component in origin, manifestation and prognosis, a simple counseling was employed as common in treatment groups. Psychotropics, aphrodisiacs and strength promoting drugs have shown to be effective in the management of psychosexual dysfunctions like premature ejaculation.

Considering all these aspects in total, a protocol for single blind clinical trial was planned to manage premature ejaculation through psychological, psychobiological and neurobio-psychological approaches. For this purpose three parallel groups were made and managed with placebo, oral medication and yâpanavasti added with oral medication. All the three groups were given simple psychological counseling as uniform control. The first group was managed by suggestions and counseling along with placebo (psychological platform), the second group by Âkârakarâbhadi yoga - medicine possessing psychotropic, aphrodisiac and strength promoting activities added with psychological counseling (psychobiological interface) and third group with Mâdhutailika-yâpanavasti - for direct control on vâta added with Âkârakarabhâdi yoga and psychological counseling (neuropsycho-biological platform)

Aims and objectives

1. To assess the feasibility of Madhutailika-yapanavasti in outpatient population

suffering from premature ejaculation.

2. To measure post vasti parameters viz retention time, number of vega, extent of evacuation and certain biological factors in patients undergone Madhutailikavasti.
3. To compare the efficacy of Madhutailika vasti in the management of premature ejaculation with placebo and Akara-karabhadiyoga

Selection of subjects

Patients attending in the Vajeekaraña O.P.D. of Departmet of Kayachikitsa, I.P.G.T. & R.A., Gujarat Ayurved University, Jamnagar having genuine complaints of premature ejaculation fulfilling the criteria for inclusion was selected irrespective of race, caste and religion, between the age group of 21– 50 years. A detailed research case record was specially prepared for the purpose incorporating all aspects of the problem on Ayurvedic and modern parlance. Pre entry examination was simple and brief and tried to include an interview of the wife wherever it was possible.

Eligibility criteria

Considering the different definitions put forth by various scientist for premature ejaculation, the inclusion criteria for the present study was kept as following:

1. Ejaculation prior to ten penile thrusts.
2. Ejaculation before or within one minute of sexual act after penetration.
3. Unable to satisfy partner in at least 50% of the coital incidences.
4. Unable to delay ejaculation till the person wishes it.
5. The problem should be persistent or recurrent and cause marked distress or interpersonal difficulties.

Exclusion criteria

1. Factors that effect the duration of the excitement phase of sexual act such as novelty of the partner or situation and recent frequency of sexual act.
2. The problem should not be a due exclusively to the direct effect of a substance (Eg. Withdrawal of opioids)
3. Persons having very short post ejaculatory refractory period.
4. Major psychiatric illness.
5. Any other major pathology observed in routine pathological and biochemical investigations.

Materials and method

The patients were randomly divided into the following three groups on first come first serve basis, and were managed accordingly for duration of one month.

Group I:- a) Psychological counseling and b) Placebo capsules (500 mg) - two capsules twice a day

Group II:- a) Psychological counseling and b) Akarakarabhadi yoga capsules (500 mg) - two capsules twice a day.

Group III:- a) Psychological counseling, b) Akarakarabhadi yoga capsules (500 mg) - two capsules twice a day and c) Madhutailika-yapanavasti for the first 10 days of the therapy.

Simple counseling method was adopted for psychological counseling consisting of limited information, specific suggestions, permissions, reassurances and directions to facilitate the communications. Placebo capsules were filled with arrowroot powder. Âkârakarabhâdi yoga contains dried powder of 1) akârakarabha (*Anacyclus pyrethrum*), 2) jatiphala (*Myristica fragrans* (Nut meg)], 3)

kumkuma (*Crocus sativus*), 4) pâraseekayâvani (*Hyoseyamus niger*), 5) khaskhasbija (*Papaver somniferum*), 6) syâmakapikacchubija (*Mucuna pruriens*), 7) jatamâmsi (*Nardostachys jatamansi*), 8) yastimadhu (*Glycyrrhiza glabra*), 9) goksura (*Tribulus terrestris*) and 10) bhallâtakaphala majja (*Semecarpus anacardium*). The first four drugs were taken ¼th part each and remaining 6 drugs one part each in the combination. Mâdhutailikavasti referred to in Niruhavastividhi of Úârangadharasamhita (Uttarakhanda, 6/28-30) was selected. The ingredients of Mâdhutailikavasti are: erandamulakvâtha (*Ricinus communis*) - 2 pala (96 ml), madhu (honey) - 1 pala (48 ml), taila (gingili oil) - 1 pala, satapuspakalka (*Anethum graveolens*) - ½ pala (24 gm), saindhava (rock salt) - ¼ pala (12 gm). In the commentary of the above context, Âdhamalla clarifies that the version of inclusion of madhu and taila as 8 pala (palâstaka) instead of 1 pala each (palâmúaka) is incorrect.[9]

All the patients were directed to keep the same frequency of sexual act and duration of foreplay as usually they do to ward off any error in the evaluation of therapy. No specific diet or restrictions given to any patient during vasti therapy. Patients were allowed to travel by any means as they wish. No definite time frame was kept for administration of vasti. It was done from 8.30 AM to 5.30 PM according to the convenience of the patient. After procedure, no specific regimen advised. No pre or post operative procedures were performed in conducting yapanavasti. A follow up period of one month was kept without any medication.

Assessment criteria

The retention time, number of vega and extent of evacuation were daily assessed in yapanavasti by personnel interrogation. The possible complications, if any, reported by the patient were charted and marked daily. The assessment was done before, during treatment (once in a week) and during follow up period (once in a fortnight). As the most complaints were subjective, various scoring system were formulated or adopted to assess the patient before and after treatments. They include Improvised Scoring scale for assessment of sexual dysfunctions (G. Sing *et al*), Hamiltons anxiety rating scale, and GRISS Questionnaire. Students 't' test were done for statistical analysis of data.

Result and discussion

Demographical data shows that patients were nearly uniformly distributed age wise and marital life wise in all groups. Further, marital life wise data ensure that novelty of sexual encounter or partner is not the cause for premature ejaculation in the affected individuals. Pre-entry examination of sexual health parameters showed very poor number of penile thrusts and very low duration of sexual act. The patients were maintained comparatively good frequency of sexual act and average post ejaculatory refractory period. All the above said data clarifies that the patients selected for the study were suffering from genuine premature ejaculation. (Tables 1&2)

The mean retention time (in minutes) of maadhutailika yapana vasti were 14.11±10.14, 17.57±14.54 and 19.02±15.12 respectively in first 3 days, middle 4 days and last 3 days. It can be seen that the average retention time is gradually increasing as the days advance. There was appreciable variability in retention time of vast in studied population. Incidental value of

TABLE 1
Distribution of patients according to age and marital life

Characteristic	No. of patient	%
I. Age (n=54)		
- Group I (n=20)		
21- 30	7	35
31- 40	11	55
41-50	2	10
- Group II (n=20)		
21- 30	7	35
31- 40	10	50
41-50	3	15
- Group III (n=14)		
21- 30	6	42.9
31- 40	7	50
41-50	1	7.1
II.Marital life (n=51)		
- Group I (n=19)		
< 3 months	2	10.5
<3-6 months	2	10.5
6-1 years	2	10.5
1-3 years	2	10.5
3-10 years	4	21.0
>10 years	7	36.8
- Group II (n=19)		
< 3 months	1	5.2
<3-6 months	1	5.2
6-1 year	0	0
1-3 years	2	10.5
3-10 years	9	47.4
>10 years	6	31.6
- Group III (n=19)		
< 3 months	0	0
<3-6 months	2	15.4
6-1 year	1	7.7
1-3 years	1	7.7
3-10 years	5	38.5
>10 years	4	30.8

more than 50 minutes as well as less than 5 minutes of retention time was also noted in few patients. A similar clinical study conducted on madhutailikavasti of 600 ml of total amount in 20 subjects of outpatient department shown an average retention time of 7±5 minutes with an incidental high value of 20 minutes (Arun *et al*). On comparison of this data with the present study it may be stated that the total amount of vasti may be inversely proportional to the retention time. (Table 3)

In the present study average of total number of vega noted were 1.14±0.2, 1.19±0.11 and 1.07±0.16 respectively in first 3 days, middle 4 days and last 3 days. There was no appreciable variability in number of vegas among studied

TABLE 2
Sexual health parameters (pre entry examination)

Parameter	Mean ± S.D	S.E.
A Frequency of sexual act (per week)		
- Group I (n=20)	2.95±1.60	0.35
- Group II (n=20)	2.75±1.16	0.26
- Group III (n=20)	3.07±1.49	0.39
B Average penile thrust (in numbers)		
- Group I (n=20)	2.8±1.54	0.345
- Group II (n=20)	4.05±2.08	0.467
- Group III (n=20)	3.28±2.33	0.62
C Average duration of sexual act (in minutes)		
- Group I (n=20)	0.385±0.17	0.63
- Group II (n=20)	0.563±-0.32	0.07
- Group III (n=20)	0.411±0.158	0.42
D Post ejaculatory refractory period (in hours)		
- Group I (n=20)	5.95±4.68	1.04
- Group II (n=20)	6.90±3.33	0.740
- Group III (n=20)	8.78±7.45	1.99

group. Almost all subjects passed one vega. The mean score of extent of evacuation noted in studied subjects shown 2.25±0.31, 2.03±0.20 and 1.98±0.06 in first 3 days, middle 4 days and last 3 days respectively. The mean score in and around 2 is suggestive of moderate evacuation without any discomfort in almost all patients. Further it is more important that no patient was complained of incomplete or absence of evacuation. A complete evacuation with appearance of mucus was also not reported by any patient. On analyzing certain important parameters in relation with utility of madhutailika yapanavasti explained classics, the findings were interesting. The jarañaœakti of patients was improved by 83.7% at significant level ($p<0.001$). The bala was improved (66.7%) and vibandha was relieved (85.7%) at significant level ($p<0.01$). The improvement in weight was negligible (0.20%) and was also insignificant. This shows that Madhutailika yapana vasti is certainly increasing digestive power and facilitate normal bowel evacuation. (Tables 3&4)

Before treatment the mean ejaculatory score of the patients was 4.10 ± 0.55, 3.65±0.49 and 4.0±0.78, in the I, II and III group respectively. By the treatment the mean ejaculatory score was changed to 2.60±1.09, 1.85±1.04 and 1.78±1.42 showing an improvement of 36.58%, 49.31% and 55.35% respectively ($p<0.001$). The effect of therapy was improving towards the III group. The mean penile thrust (in numbers) were 2.81.54, 4.05±2.08, 3.28±2.33 and the mean duration of sexual act (in mts) was 0.385±0.17, 0.56±0.32 and 0.41±0.15 respectively in 3 groups. The yapanavasti group (III Group) showed an improvement of more than 4 times in the penile thrust and more than 7 times in the duration of sexual act ($p<0.01$). The effect of therapy in penile thrust and duration of sexual act was nearly similar in I and II groups, lower in percentage of improvement but higher in significance ($p<0.001$) in comparison to III group. (Table 5)

TABLE 3
Retention time, number of vega and feeling of evacuation on 14 patients undergone yapanavasti

	First 3 days			Middle 4 days			Last 3 days		
	Mean	SD	SE	Mean	SD	SE	Mean	SD	SE
1. Average retention time* of yapanavasti	14.11	10.1	2.7	17.57	14.5	3.8	19.02	15.1	4.0
2. Average number of vega	1.14	0.205	0.05	1.19	0.01	0.03	1.07	0.16	0.04
3. Feeling of evacuation	2.25	0.31	0.08	2.03	0.20	0.05	1.98	0.06	0.01

*Mean values in minutes

TABLE 4
Effect of yâpanavasti on certain parameters of 14 patients

Parameters	Mean score		% relief	X	SD	SE	t	P
	BT	AT						
1 Jaranasakti	1.29	0.21	83.7	1.07	0.92	0.25	4.37	<0.001
2 Bala	1.29	0.43	66.7	0.86	0.77	0.21	4.16	<0.01
3 Vibandha	1.0	0.143	85.7	0.86	0.86	0.23	3.71	<0.01
4 Weight	60.75	60.89	0.20	0.143	2.107	0.563	0.25	>0.05

The assessment of therapies in between the course of treatment showed that the reduction in ejaculatory score was in a regular fashion in group I during treatment period and consistent during follow-up. The ejaculatory delay was improved by 41.09% (15 days) and 56.16% (30 days). The achieved result was reduced to 43.83% during the first phase of follow-up period and then slightly increased to 49.31% in the second phase. The reduction in the achieved result in the II group during the fist 15 days of follow-up period may be due to psychological or biological dependence of the drug made. But the result was almost regained back by the behavioural conditioning of the patient. In the III group the results were achieved suddenly by 50% within 15 days of treatment. Probably the 10 days of vasti course may be influenced it. The III group was also more reliable since the results were uniformly consistent during follow-up period also. (Table 6)

The ability to delay ejaculation and the severity of the problem was assessed with the four itemed subscale of GRISS Questionnaire for high reliability and good validity. The first item enquired the 'ability to delay ejaculation during inter course when he may think he may be coming too quickly' aimed to understand the maintenance of internal cue, identification of ejaculatory inevitability and voluntary control over ejaculation. Almost all the patients were answered 'never' (Mean.B.T. score 3.95, 4.0 and 4.0 respectively in I, II and III groups) before treatment. The mean A.T. score was considerably reduced in III group to 2.92 showing an improvement of 27.0% ($p<0.01$). 5.1% and 12.5% improvements were also noted in I and II groups but both were statistically insignificant. From the foregoing observations it may be assumed that Mâdhutailikayâpanavasti provides certain degree of significant voluntary control over ejaculation in comparison to oral medication or placebo. (Table 7)

The second item was to examine whether the

TABLE 5
Effect of therapy on ejaculation score, penile thrust and duration of sexual act

Description	Mean score		% relief	X	SD	SE	t	P
	BT	AT						
I. Ejaculation score								
- Group I (n=20)	4.10	2.60	36.58	1.50	0.94	0.21	7.09	<0.001
- GroupII (n=20)	3.65	1.85	49.31	1.8	0.95	0.21	8.46	<0.001
- GroupIII (n=14)	4.0	1.75	55.37	2.21	1.31	0.35	6.317	<0.001
II. Number of penile thrust								
- Group I (n=20)	2.8	8.65	208.90	5.89	2.72	0.608	9.619	<0.001
- GroupII (n=20)	4.05	13.85	242.00	9.80	8.84	1.978	4.954	<0.001
- GroupIII(n=14)	3.286	17.85	443.40	14.71	14.97	4.002	3.677	<0.01
III. Duration of sexual act								
- Group I (n=20)	0.385	1.248	224.2	0.888	0.448	0.10	8.864	<0.001
- Group II (n=20)	0.563	2.238	297.5	1.550	1.196	0.268	5.793	<0.001
- GroupIII (n=14)	0.411	3.393	725.5	2.982	3.599	0.962	3.10	<0.001

TABLE 6
Assessment of ejaculatory score in between the course of treatment

Group	Mean B.T. (0 day)	Mean during treatment		Mean during follow up	
		15 days	30 days	45 days	60 days
Group I (n=20)	4.10 ± 0.55	3.25 ± 0.98 (20.73%)	2.65 ± 0.98 (35.36%)	2.60 ± 1.04 (36.58%)	2.60 ± 1.09 (36.58%)
Group –II(n=20)	3.65 ± 0.49	2.15 ± 0.58 (41.09%)	1.60 ± 0.88 (56.16%)	1.90 ± 0.96 (43.83%)	1.85 ± 1.04 (49.31%)
Group III (n=14)	4.0 ± 0.75	2.0 ± 0.78 (50.00%)	1.64 ± 1.15 (59.00%)	1.86 ± 1.40 (53.50%)	1.785 ± 1.42 (55.37%)

subject is enjoying the sexual act for a sufficient length of time without early ejaculation. 33.33%, 42.50% and 57.2% improvements were noted in group I, II and III in a statistically significant level ($p<0.001$). The third item was to enquire the incidence of ejaculation immediately after penetration, and highly significant improvement was noticed in all groups (65.9%, 52.72% and 87.8% respectively ($p<0.001$). The last item analyses the incidence of ejaculation before penetration, which also relieved by 41.0%, 18.30% and 53.06% respectively at significant level ($p<0.001$). (Table 7)

Hence in nutshell it can be conceptualized that an ejaculation before penetration or just after penetration and when purely psychological factors are operating, it can be managed by even placebo; where as oral medication and vasti considerably increases the duration of sexual act, with an advantage effect in vasti therapy by imparting certain degree of voluntary control on ejaculation.

The performance anxiety was considerably reduced in the II and III groups (61.29% and 69.40% respectively) at significant level ($p<0.001$). Psychological counseling along with placebo effect noted in I group was 45.31% ($p<0.001$). The additional effects gained in the II and III groups can be attributed to the psycho-tropic effects of Âkârakarabhâdi yoga. The reduction in the performance anxiety and improvement in the ejaculatory performance were coinciding shows the strong positive correlation with them. The effect of therapy in the Hamilton's anxiety rating scale was also falling in same fashion with 48.8%, 65.95% and 75.30% significant ($p<0.001$) improvement in I, II and III groups. The over all effect of therapy was higher in the III group with a better percentage of cure and marked improvement followed by II group and I group. (Table 8)

The vasti was done without any restriction to time, food intake, traveling, etc. to OPD population. No pre-operative or post operative procedures were performed. On analyzing the chart showing the complications reported by the patients, it can be understood that no patients are complained of any serious complications by undergoing Madhutailika-yapanavasti (Table 9). A few patients were

TABLE 7
Assessment of effect of therapy based on GRISS questionnaire

Description	Mean score		% relief	X	SD	SE	t	P
	BT	AT						
1. Can you delay ejaculation during intercourse if you think you may be coming too quickly?								
- Group I (n=20)	3.95	3.75	5.1	0.20	0.523	0.117	1.720	>0.05
- GroupII (n=20)	4.0	3.50	12.5	0.50	1.051	0.235	2.127	>0.05
- GroupIII (n=14)	4.0	2.92	27.0	0.428	1.283	0.343	4.163	<0.01
2. Can you avoid ejaculating too quickly during intercourse?								
- Group I (n=20)	3.75	2.50	33.33	1.25	0.910	0.203	6.158	<0.001
- GroupII (n=20)	3.65	2.10	42.50	1.55	0.887	0.198	7.815	<0.001
- GroupIII (n=14)	4.0	1.714	57.2	2.285	1.069	0.285	8.00	<0.001
3. Do you ejaculate without wanting to almost as soon as your penis enters your partner's vagina?								
- Group I (n=20)	0.7	2.05	65.9	1.35	1.089	0.243	5.56	<0.001
- GroupII (n=20)	1.30	2.75	52.72	1.55	0.759	0.169	9.172	<0.001
- GroupIII (n=14)	0.357	2.928	87.8	2.57	1.22	0.327	7.870	<0.001
4. Do you ejaculate by accident just before your penis is at least to enter your partner's vagina?								
- Group I (n=20)	1.8	3.05	41.0	1.25	1.069	0.239	5.230	<0.001
- GroupII (n=20)	2.9	3.55	18.30	0.65	0.745	0.166	3.916	<0.001
- GroupIII (n=14)	1.642	3.5	53.06	1.857	1.027	0.275	6.765	<0.001

TABLE 8
Effect of therapy on performance Anxiety

Description	Mean score		% relief	X	SD	SE	t	P
	BT	AT						
I. Performance Anxiety								
- Group I (n=20)	3.20	1.75	45.31	1.45	0.945	0.211	6.866	<0.001
- GroupII (n=20)	3.10	1.20	61.29	1.90	0.968	0.216	8.779	<0.001
- Group III (n=14)	3.50	1.071	69.40	2.429	1.222	0.327	7.433	<0.001
II. Hamiltons anxiety rating scale								
- Group I (n=20)	13.5	6.90	48.88	6.90	1.86	0.416	16.58	<0.001
- GroupII (n=20)	14.10	4.80	65.95	9.2	3.3	0.74	12.39	<0.001
- GroupIII (n=14)	13.85	3.42	75.30	10.42	4.16	1.113	9.370	<0.001

TABLE 9
Chart showing complications reported by 14 patients undergone yapanavasti

Complication	Patients / Number of times reported													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
No evacuation	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Over evacuation	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fatigue	-	2	-	-	-	-	-	-	-	-	-	1	-	-
Flatulence	-	-	-	1	-	-	-	-	-	1	-	1	-	-
Hiccough	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chest discomfort	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vomiting	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tenesmus	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Headache	-	-	-	-	1	-	-	-	1	-	-	1	-	-
Body ache	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anal pain	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Anal discharge	-	-	-	-	-	-	-	-	-	-	-	-	-	-

reported flatulence and fatigue which also in rare incidents. This observation shows that yapanavasti is an ideal therapeutic intervention for present life style.

Conclusions

The following conclusions may be drawn from the study:

1. Madhutailikayapanavasti administered to OPD population without any specific restriction did not show any complications hence can be considered as an ideal therapeutic modification of vasti therapy for the present life style.
2. The average retention time (in minutes) of Maadhutailikayapanavasti was: 14.11 ± 10.14, 17.57±14.54 and 19.02 ± 15.12 respectively in first 3 days, middle 4 days and last 3 days. Madhutailikavasti showed one vega and moderate evacuation without any discomfort in almost all patients.
3. Yâpanavasti has shown improvement of digestive power ($p<0.001$), good bowel evacuation and improvement physical strength ($p<0.001$ for both) but failed to make any significant change in weight.
4. Placebo, Âkârakarabhâdi yoga and Yâpanavasti were showed improvement in the ejaculatory performance by 36.58%, 49.81% and 55.37% at significant level ($p<0.001$).
5. The number of penile thrusts were improved by more than 4 times and duration was improved by more than 7 times in yapanavasti group ($p<0.01$)
6. A considerable population (27%) in the III group achieved certain voluntary control over ejaculation ($p<0.01$).

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Āryavaidyan Vol. XXVII., No. 4, May - July 2014, Pages

SVASARIVATI - A HERBO MINERAL COMPOUND - AN ANALYTICAL STUDY

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Abstract: Svasarivati is a herbo-mineral formulation used in the management of svasa (bronchial asthma). It is a combination of parada, gandhaka, vangabhasma, sunthi, pippali and marica and gomutra as bhavanadravya. This drug was prepared and subjected for certain physico - chemical analysis viz. pH value, loss on drying, total ash, acid insoluble ash, water soluble extractive, alcohol soluble extractive, HPTLC finger prints, X-ray powder diffraction and X-ray fluorescence to find out chemical constituents and characterization of the drug.

Introduction

In ancient days the concept of quality and standardization of medicines was based on physical aspect of the drugs such as identification, colour, size, texture, etc and analyst in such cases was often the physician himself. But in modern era, commercialization and bulk production of ayurvedic medicines has posed several problems with regard to quality. Hence standardization of all Ayurvedic medicines with advanced modern parameters has become necessary to maintain their quality.

The herbo-mineral formulation Svasarivati[1] was studied for standardization through physico-chemical properties with modern techniques like HPTLC, XRD, XRF, etc. The drug was prepared in the Dept. of Rasa Shastra, Dr. N.R.S. Govt. Ayurvedic College, Vijayawada and the tests conducted at Sastra University, Thanjavur and DMRL, Hyderabad.

Material and methods

The following methods were adopted for physico-chemical[2,3,4] characterization and standardization of the test drug:

Physico-chemical standards

pH value:- The drug was made into 10% solution in water and the pH of the liquids was determined with the help of pH meter and electrode system.

Loss on drying:- 5 gram accurately weighed drug, put in a petri dish, was heated on a hot plate at 105^0C for 3 hours and after required heating, the petri dish allowed to cool in a desiccator and then weighed. The process of heating, cooling and weighing were continued till a constant weight was achieved and the

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difference in the weight of the petri dish was calculated for loss on drying.

Ash value:- Determination of ash value gives an idea of the inorganic constituents and salts present in a drug. Two types of values such as total ash, and acid insoluble ash were determined.

Total ash:- Crucible washed in distilled water, dried in oven at 105^0c for 2 hours and 1gm of sample taken in the pre-dried crucible incinerated in muffle furnace at 500^0c for 15 minutes. The muffle furnace then switched off and crucible allowed for self-cooling. Immediately after self-cooling, it weighed and the percentage of the ash obtained calculated from the weight of the ash obtained and expressed as %w/w.

Acid insoluble ash:- Added 25 ml of diluted hydrochloric acid to the crucible containing total ash, collected the insoluble matter on a filter paper (Whatman 41) and washed with hot water until the filtrate was neutral. Transferred the filter paper containing the insoluble matter to the original crucible and dried on a hot-plate then ignited to constant weight, allowed the residue to cooling and weighed.

Extractive values:- 5 gram sample mixed with 100 ml of distilled water in a glass stopper conical flask shaken frequently for 6 hours was kept for 18 hours and then filtered rapidly taking precautions against loss of solvent. 25ml filtrate was taken with pipette and evaporated in a tarred shallow bottom dish and dried on water bath up to constant weight and calculated the percentage of water soluble extractives. The same process was done with ethanol to get alcohol soluble extractives.

The physico-chemical standards of Svasarivati are shown in Table 1.

Solubility

10 ml of each solvent was taken separately in a test-tube; then 100 mg of each sample of Svasarivati was added and shaken for every 15 minutes up to 12 hours. The solubility was observed after 12 hours. (Table 2)

HPTLC

High Performance Thin Layer Chromatography provides chromatography drug finger print suitable for monitoring the identity and purity of drugs.

1 gram Svasarivati taken in 50 ml round bottom flask added with 50 ml methanol was refluxed on water bath (80^0C) for 30 minutes and filtered (Whatsman filter paper No. 41). The

TABLE 1
Physico-chemical standards of Svasari vati.

	Test	Result (in %)
1	pH(1 % w/v solution)	7.05
2	Loss on drying at $105^{Ë%}$C	10.81
3	Total ash	26.43
4	Acid insoluble ash	10.11
5	Water soluble extractive	48
6	Alcohol soluble extractive	17.04

TABLE 2
Solubility of Svasari vati in different solvents

	Name of the solvent	Solubility
1.	In Water	Partially soluble
2.	Alcohol	Slightly soluble
3.	Chloroform	Very slightly soluble
4.	Ether	Insoluble
5.	Acetic acid	Partially soluble
6.	Hydrochloric acid	Partially soluble
6.	Nitric acid	Freely soluble
7.	Sulphuric acid	Partially soluble

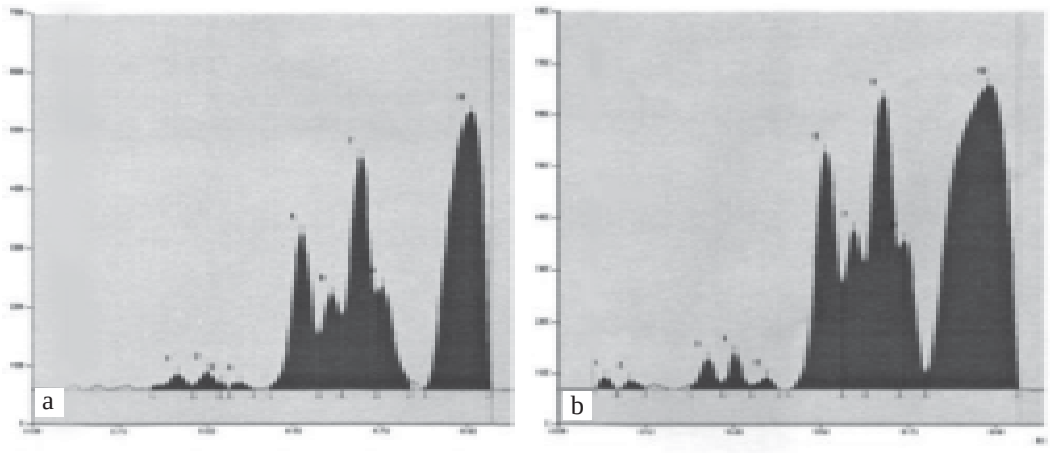
filtrate then evaporated on a water bath up to dryness and the dried residue was dissolved in 5 ml of chloroform.

The sample so prepared was applied over pre-coated Silica Gel 60 F_{254} plate, 0.2 mm thickness and 8 cms length (Merck, Germany) with the help of sample applicator thinomat 5 sample applicator. The sample was developed with the help of mobile phase diethyl ether: toluene: Dixon

Scanning was done with the help of CAMAG Reprostar3 at various lengths i.e. Svasarivati UV light at 254nm and 356nm.Volume of sample applicator - 5 µl, 10µl characters. A band (R_f 0.53) corresponding to Piperine was visible in both test solution tracks (Fig. I)

XRD study

X-ray diffraction[5] technique is the most useful technique in the characterization of crystalline materials such as metals, intermetallic, ceramics, minerals, polymers, etc. This can be used for qualitative and quantitative phase identification analysis as well as for the determination of crystallinity, grain size, lattice parameters and also identifying the different crystal structures of the same compound. The



Peak	Start Rf	Start Height	Max Rf	Max Height	Height %	End Rf	End Height	Area	Area %
1	0.19	4.3	0.25	26.8	1.72	0.29	7.7	850.3	1.40
2	0.29	7.9	0.32	31.6	2.03	0.35	9.4	742.4	1.22
3	0.35	9.7	0.36	12.5	0.80	0.37	0.0	118.4	0.19
4	0.37	1.8	0.40	11.4	0.73	0.43	2.1	282.3	0.46
5	0.46	3.5	0.54	267.4	17.17	0.58	94.9	9000.2	14.82
6	0.58	95.6	0.61	163.1	10.47	0.63	127.9	4547.1	7.49
7	0.63	128.3	0.67	396.0	25.42	0.71	161.8	13565.5	22.33
8	0.71	162.4	0.73	176.1	11.31	0.79	10.9	4808.0	7.91
9	0.82	3.8	0.93	472.8	30.35	0.97	30.5	26833.8	44.17

*As - Assigned substance - unknown

Peak	Start Rf	Start Height	Max Rf	Max Height	Height %	End Rf	End Height	Area	Area %
1	0.00	0.5	0.03	21.8	0.91	0.05	0.2	383.1	0.35
2	0.06	0.1	0.08	16.3	0.68	0.12	4.6	355.6	0.32
3	0.22	8.0	0.26	59.4	2.47	0.29	12.3	1458.0	1.32
4	0.30	12.5	0.32	69.3	2.89	0.36	5.5	1481.0	1.34
5	0.36	5.6	0.40	22.5	0.94	0.43	0.3	531.4	0.48
6	0.45	0.0	0.53	459.9	19.16	0.57	205.1	16608.4	15.04
7	0.57	207.0	0.60	308.1	12.84	0.62	245.8	8599.2	7.79
8	0.62	247.8	0.66	565.9	23.58	0.70	272.5	21216.0	19.21
9	0.70	273.6	0.71	288.3	12.01	0.76	31.9	6985.7	6.33
10	0.76	32.8	0.90	588.7	24.53	0.97	20.2	52810.4	47.82

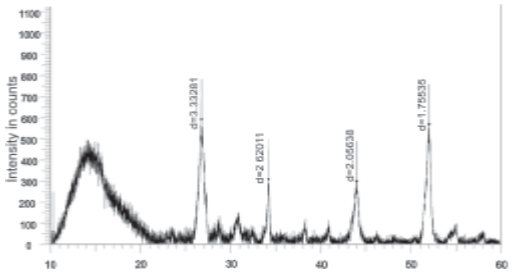
Fig. I - HPTLC finger prints of Svasarivati
a Peak display (5µl of sample); b Peak display (10µl of sample)

XRD study of Svasarivati showed the following results: (Fig II)

- Several peaks of HgS and SnO_2
- Strongest peaks of HgS at 2- theta scale at 43^0
- Strongest peaks of SnO_2 at 2-theta scale at 26^o, 34^0
- Combination of HgS, SnO_2 present as 2- theta scale at 52^0 detected.
- Structure of HgS Hexagonal
- Structure of SnO_2 Tetragonal

XRF

X-ray fluorescence is an elemental analysis technique with unique capabilities like accurate determination of major elements and abroad elemental survey of the sample composition without standards. A technique known as fundamental parameters can estimate the elemental composition of unknown without standards. Detection limits for XRF are generally in the 10-100ppm range for heavy elements and elements lighter than Na are difficult or impossible to detect. The XRF report of Svasarivati is shown in Table 3.



1 - File: 1 raw - Type: 2Th/Th locked - Start: 10.000° - End: 60,000° - Step: 0.010° - Step time: 1.0 - Temp: 25°C (Room) - Time started: 7 s - 2-Theta: 10.000°- Theta: 5.000°

Angle	d value	Intensity	Intensity %
10.199	8.66623	49.6	8.5
26.727	3.33281	585	100.0
34.195	2.62011	300	51.3
43.998	2.05638	290	49.7
52.059	1.75535	561	96.0

Fig. II - X-rd result of Svasarivati

Conclusion

The drug found to be freely soluble in nitric acid, partially soluble in water, acetic acid,

TABLE 3
XRF report of Svasarivati

Elements	Concentration (%)
1. In Oxide form	
- So_3	34.24
- Hg	21.88
- K_20	15.82
- SnO_2	8.37
- Cl	5.68
- CaO	4.01
- Na_2O	3.94
- SiO_2	1.62
- Fe_2O_3	1.12
- MgO	1.10
- P_2O_5	0.96
- Al_2O_3	0.54
- PbO	0.38
- MoO_3	0.20
- CuO	0.13
Total	99.99
2. In concentration	
- O	29.70
- Hg	21.88
- S	13.71
- K	13.13
- Sn	6.59
- Cl	5.68
- Na	2.92
- Ca	2.87
- Fe	0.78
- Si	0.76
- Mg	0.66
- P	0.42
- Pb	0.36
- Al	0.28
- Mo	0.13
- Cu	0.11

hydrochloric acid sulphuric acid, slightly soluble in alcohol, very slightly soluble in chloroform and insoluble in ether. The HPTLC confirms the herbal ingredients piperene, etc. The XRD shows the HgS compound and presence of SnO_2.

Acknowledgements

The author is thankful to Dr. P. Veera Reddy, Principal, Dr. N.R.S Govt. Ayurvedic College, Vijayawada, Dr. Brinda, Dean, Mrs. Niraimathy, Research Assistant, CARISM, Sastra University, Thanjavur, Dr. L. Durai, Director, Dr. Kamal Kalyaan, Mr. Prasad and to Mr. J. Kiran ICP - Department of Defense Metallurgical Research Laboratory (D.M.R.L.), Kanchanbagh, Hyderabad.

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Āryavaidyan Vol. XXVII., No. 4, May - July 2014, Pages

RECONSTRUCTIVE THERAPY IN AYURVEDA

N.H. Kulkarni

Abstract: Ayurveda, being ancient science of life has many folded therapies for the ailing humanity starting from simple principles to the most advanced plastic repair. Sandhanakarma explained by Susruta can be corroborated with reconstructive therapy/ surgery, which has been evolved recently in Modern science. Susruta's technique of repair of mutilated nose is still being referred in modern plastic surgery as Susruta's technique of frontal flap method. This paper contains the details of reconstructive surgery in the past and present in analytical way.

Introduction

In ancient time wars were very common amongst the ruling Kings, hence the injuries. People used to meet with injuries like mutilated ears, nose, etc. These types of problems were solved by the surgical line of treatment. Thus reconstructive as well as cosmetic surgery was developed in Vedic period. References to reconstruction of injured parts can be seen in Veda but there are no explanations about the procedures and it is in the Samhita period that gives description about the reconstruction and cosmetic surgery in detail.

Plastic surgery is one of the developed branches of surgery, devoted to the treatment of deformities of the face and other parts of the body. In ancient Indian literature this procedure is known as the sandhanakarma i.e. to join the separated part or remake the part of the body by means of suitable materials to reveal or substitute the destroyed part.[1]

Susruta is the first surgeon who explained reconstructive surgery of nose, ear pinnae, cleft lip, etc. (Su. Su. 16th Chapter).

Derivation

The word 'plastic' in plastic surgery does not mean 'artificial' but is derived from the ancient Greek word 'plastikos'or 'plassein' which means to mould or to form.

The operation, replacement or restoration of visible portions of the body, was performed to correct structural or cosmetic defect. In performing corrective plastic surgery the surgeon may use tissue from the patient or from another person or inert material, which is non-irritating, has a consistency appropriate to use and is able to hold its shape and form independently.

Classification of transplantation

1. Homo transplantation:- Transplantation of tissue from one person to another having same

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species – e.g. person to person: a) Syngenic transplantation - carried out in individual having genetic similarity identical twins, b) Allogenic - individuals not having any genetical similarity - e.g. any person to another - cornea, kidney but limited by rejection phenomena.

2. Auto transplantation:- Transplantation of tissue or organ from one site to another of same individual - e.g. skin, bone, tendon graft.

3. Hetero transplantation:- Transplantation from one species to another species - e.g. animal to man.

Lines of incision

It is said that the to minimize the injury to the nerves, vessels, tendons and ligaments, pain, wound healing time, prevents formation of keloid/scar mark, the incision should be oblique i.e. along the anatomical folds, in places like eye brow, cheek, temporal region, fore head, around eyes and lips, on gum, axillary and inguinal region, etc.[2]

Description of flap reconstructions of nose and ear are described in the Susrutasamhita, which were practiced in the 5th century A.D in India. These techniques were passed on through the generation and came to be known as "Indian plastic surgery" as recently as the late 19th century.

The 2nd world war heralded the modern era of plastic surgery. Advances in the anesthesia and controlling of infections were favourable elements the wide acceptance of plastic surgery. Development of operative microscope in 1950 opened the door to reconstructive micro vascular surgery and complex reconstructions.

Historical review

Vedic period:- Aswinikumara reconstructed the head of Daksa and Dadhichi; leg transplantation of Visphala, wife of Khela; Hetero-trasplantation carried out by lord Siva i.e. the head of an elephant to Ganesh; Transplantation of goat's testis to Indra by Aswinikumara, etc. are few mythological references.

Samhita period:- Physicians in India were utilizing the skin graft for reconstructive purpose as early as 800 B C. Description of transplantation is first seen in Susrutasamhita. Then onwards, it gradually developed till Vagbhata's period.

Due to impact of Buddha and Jaina dharma, the surgery branch in India slowly lost their dignity. People were not interested to learn surgery because they thought it as 'devils work'. Thus reconstructive surgery diminished in India and simultaneously spread towards Arab and European countries via merchants.

Some milestones in this field are as follows:

- In 14th & 15th century, Branco in family Sicily, who got the knowledge, performed construction of nose taking flap from the hand.
- In 16th century Winco family in Italy was famous for plastic surgery.
- 1814 - First reconstructive surgery was done by an English surgeon.
- 1818 - Indian and Italian method of construction done in Berlin
- 1823 - First skin grafting was done by Bonger.
- Developed and sophisticated plastic surgery developed during 1st world war.
- Giliese - an ENT surgeon is known as father of modern plastic surgery.

Basic principles:

- Optimize wound by adequate debridment or resection

- Wound or flap must have good blood supply to heal
- Place scars carefully - "lines of election"
- Replace defect with similar tissue – like to like
- Observe meticulous surgical technique
- Remember donor site cost.

Factors influencing reconstructions

Patient's factors:- a) motivation, b) General health, c) Smoking, d) Other healing factors (nutrition, vitamins, etc.), e) Donor site cost to patient vs. benefit.

Defect factors:- a) Size and complexity of defect, b) Anatomy, c) Tissue lost, d) Availability of local tissue, e) Time factor for wound healing.

Some of the reconstructive procedures

Even though the neck is cut up to the krkatika (atlanto-occipital joint) and air is coming out, it should be placed back on its anatomical place and stitched with continuous suture and bandage properly. Ajaghrta has to be sprinkled over it and the patient should be taken food in supine position and sleep in well controlled position. If wide separation is there on the limbs because of oblique blow, the same should be sutured after quickly putting the bones and joints back to their original place. Apply vellitaka bandage over it and after keeping the soaked vartti on it, give support to the affected limb with gophanabandha.

Rhinoplasty

Susruta has said that if the portion of nose is cut off, the portion should be first measured with a leaf. Then a piece of skin of the required size should be dissected from the living skin of the cheek and turned back to cover the nose, keeping a small pedicle attaches to the cheek. The part of nose to which the skin is to be attached should be made raw by cutting of the nasal stump with a knife. The surgeon then place the skin on the nose and stitch the two part swiftly, keeping the skin properly elevated by inserting two tubes of *erandanaala* in each part of nostril so that the new nose gets proper shape. The skin thus properly adjusted. The skin thus dusted with powder prepared out of Madhuka, Raktachandana and Daruharidra. Finally it should be covered with cotton after applying medicated ghee.

Otoplasty

Susruta and Vagbhata have mentioned reconstruction of torn ear lobule with 15 types of operative measures. Among these 10 measures are successful and 5 are unsuccessful. If the ear pinna has been torn out of its place, it should be restored on its original place and stitched well around it. The meatus should be filled with the medicated oil.[3] They have also mentioned reconstruction of the injured ear pinna which one is known as Karnasandhaana.[4]

If a person without ear lobule comes to the surgeon, he should reconstruct the ear lobule as explained below.

After making the patient in a suitable position and deciding method to be employed, the Surgeon do excision, incision or scraping whichever is suitable to expose the healthy granulation tissue. Examine the blood and treat accordingly. After this pinna is scraped carefully and take a flap of skin from the cheek region with a slip attached to the donor site. Afterwards skin is stitched in proper dimension i.e. in anatomical position and haemostasis is achieved. Follow the post operative procedures.

Vagbhata (Vruddha) further said that, if this measure fails and appropriate healing not takes place then the ear should be stitched with silk thread. If the earlobe is too thin then the cotton wet with fresh blood should be placed on this. After this *Vranopachaara* should be done.[5]

Reconstructions of cleft lip:- If the lip is injured or congenital cleft lip is there, the same procedure is carried out as that of rhinoplasty and otoplasty. Vagbhata mentioned that before joining the two edges of the lip one should scrape the healed area and suture it with thread.

Post operative care

Apply honey and ghee on the operated part and cover with gauze piece and proper bandaging to be done over it. After every 3 days the operated area is irrigated with *tila taila* kept *pichu* on it. The patient should avoid the any direct violence, sleeping on that side, exercises, over eating, intercourse, direct heat and excessive talking.

Contraindications

न चाशुद्धरक्तमतिप्रवृत्तरक्तं क्षीणरक्तं वा सन्दध्यात्। स हि वातदुष्टे परिपुतनवान्, पित्तदुष्टे दाहपाकराग–वेदनावान्, श्लेष्मदुष्टे स्तब्धः कण्डुमान्। अतिप्रवृत्त–रक्ते श्याव शोफवान्। क्षीणोऽल्परक्तवान् न वृद्धिमुपैति....।।

Vitiated blood (asudharakta)

- Vatadusti causes detachment of reconstructed part even after good healing.
- Pittadusti causes inflammation at the operated site. Kaphadusti causes pyemic abscess, itching sensation
- Atipravrtaka rakta - not proper alignment and swelling, necrosis of the part.
- Ksheena rakta - no growth of the reconstructed part (atrophied)

Signs and symptoms of proper treatment

The following are the signs and symptoms of properly constructed part:[6]

- No complications in the reconstructed part.
- Similar colour of that surrounding tissue
- Simultaneously grows along with adjacent tissue
- Devoid of inflammatory signs (colour, rubor, dolor and tumor).
- Not easily detached.

Role of jalukavacarana in plastic surgery

Application of leech on the recipient part enhances the circulation of blood in the injured area. Leech sucks the extra blood and thereby reduces the pressure and leads to a better circulation. Leeches secrete a chemical that help to open the veins and thereby blood circulation.

- It reduces inflammatory condition like swelling, pain, etc.
- Prevents ischemia
- Prevents necrosis
- Gives complexion to the skin.

Cosmetic surgery

Susruta has mentioned cosmetic surgery also which can replace/regaining the anatomical deformities of the overlying skin. These procedures are described as follows:

Utsadana	- Elevation of depressed part
Avasadana	- Destruction of the over growth
Mrdukarana	- Softening of skin
Darunakarma	- Hardening
Krsnikarma	- Blackening
Pandukarma	- Whitening of the part
Roma-sanjanana	- Production of hair over the part
Roma-paharana	- Removal of excessive hair

Discussion

Susruta has mentioned all types of surgeries including orthopedic, urological, gastroenterological, ENT surgery, obstructive, reconstructive and cosmetic surgeries. Vagbhata has followed his basic procedures including some special techniques and some new surgical instruments, suturing materials and some new medicines. This shows the improvement in the surgical field in those period, but unfortunately the following factors obstructed the development of the Ayurveda especially in to the surgical field:

- Impact of Buddha and Jaina
- People thought that surgery is devil's work
- Attack of Mughal, Portuguese and British over India.
- Generation gap.
- Lack of skilled allied workers like black smith, carpenters, etc.
- Invention of modern medicines
- No proper helping hands for Ayurvedic surgeons
- Lack of sterilization, anesthetic and antiseptic agents.

British learn the Indian plastic surgery

Kawasajee, a Maratha cart driver and a British servant was caught by Sultan in Shrirangapattana and his nose and arm were cut off as a punishment and sent back to the English commando. After some day, the commando noticed Kawasajee's peculiar nose and scar over forehead. He asked about the history and came to know about the substituted nose done by a Maratha vaidya. The officer sent for the vaidya and asked him to perform the reconstructive procedure.

The operation was performed in front of 2 English doctors Thomas Cruso & James Findlay.

Procedure:- He used a thin plate of wax as the molding agent of the nose, kept on the forehead and drew a line around it. Then dissected off a much skin it had covered, leaving undivided a small slip between the eyes, which reserve the blood supply.

An incision was made through the skin which passed around both alae and goes along the upper lip. The skin brought down from the forehead; being twisted half around was inserted into this incision and pale catechu was softened with water; used as cement to secure the joining. This was carried out for 4 days and ghee applied later. Connected skin was separated on 20th day of operation; left for 4-5 days and inserted bits of cloth into nostrils to keep sufficient opening. The operation was successful. After a length of time, the nose looked like natural without scar over forehead.

Ayurveda - the Indian medical science can be considered as the mother of all the medical disciplines of the world as it has provided the launch pad for further researches and developments that have been achieved with advent of modern technologies in these days.

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2. तत्र भ्रूगण्डशंखललाटाक्षिपुटौष्ठदंतवेष्ट–कक्षाकुक्षिवंक्षणेषु तिर्यक्छेद उक्तः। चंद्रमण्डलवच्छेदान् पाणिपादेषु कारयेत्। अर्धश्चंद्राकृतिंश्चाणि गुदमेढ्रे च बुद्धिमान् ।। (सु. सू. ५/४)

अन्यथा तु सिरास्नायुच्छेदनं, अतिमात्रं वेदना,
चिराद्व्रणसंरोहो, मांसकंदिप्रदुर्भावश्चेति।।
कुर्याद्वयस्थस्य छिन्नां शुद्धस्य नासिकां ।।
(१८/४९-६५)

छिन्ध्यानासासमं पत्रं ततुल्यं च कपोलत् ।
त्वङ्मांसं नासिकासन्ने रक्षंस्तत्तनुतां नयेत्।
सीव्येद् गण्डं ततः सूच्या सेविन्या पिचुयुक्तया।।
नासच्छेदेऽथ लिखिते परिवर्त्योपरि त्वचं ।
कपोलवध्रं संदध्यात्सीवेन्नासां च यत्नतः।।
आमतैलेन सिक्त्वाऽनु पत्तङ्गमधुकांजनैः।।
शोणितस्थापनैश्चान्ये सुश्लक्ष्णैरवचूर्णयेत्।
ततो मधुघृताभ्यक्तं बध्वाऽऽचारिकादिशेत्।।
जात्वाऽवस्थांतरं कुर्यात् सद्योव्रणविधिं ततः ।।
छिन्ध्याद्रूढेऽधिकं मांसं नासोपांताच्च चर्म तत्।
सीव्येत्ततश्च सुश्लक्ष्णं हीनं संवर्धयेत्पुनः।।
निवेशिते यथान्यासं सद्यश्चिन्नेऽप्ङ्गं विधिः।।
नाडियोगाद्विनौष्ठस्य नासासंधानवद्विधिः।। ६६
सध्योव्रणेष्वायतेषु संधानार्थं विशेषतः।
मधुसर्पिश्च युंजीत पित्तघ्निश्च हिमाःक्रियाः
२०/८

कर्णे स्थानाच्चुते स्यूते श्रोतस्तैलेन पूरयेत् ।२०

कृकाटिकायां छिन्नायां निर्गच्छन्यपि मारुते।
समं निवेश्य बध्निनयात् स्यूत्वा शीघ्रं निरंतरं।।
(अ.हृ. २६/२०)

पादौ विळंबिमुष्कस्य प्रोक्षा नेत्रे च वारिणा ।
प्रवेश्य वृषणौ सीवेत् सेवन्या तुनासंजया।।
कात्यश्च गोफणा बंधः कत्यामवेश्य पट्टकम्।
स्नेहसेकं न कुर्वीत तत्र क्लिद्यति हि वृणः ।।

3. कर्णं स्थानादपहृतं स्थापयित्वा यथास्थितम्।
सीव्येद्यथोक्तं तैलन स्रोतश्चाभिप्रतर्पयेत्।।

4. गण्डादुत्पाट्य मांसेन सानुबंधेन जीवता।।
कर्णपालिमपालेस्तु कुर्यान्निर्लिख्य शास्त्रवित्
(सु. सू. १६/६)

5. सन्धिमश्लिष्यंतम् क्षौमसूत्रेण सीव्येत् ।
अतिक्षीणपालिकम् वा शोणितोक्तेन पिचुना
वेष्टयेत्। व्रणवच्चैनमुपाचरेत्। (अ.सं.उ. २२/७६)

6. स यदा सरूढो निरुपद्रवः सवर्णो भवति, तदैनं शनैः शनैरभिवर्धयेत्। अतोऽन्यथा संरंभपाक-रांवेदनावान्, पुनश्चिद्यते वा।।

NOTE TO THE CONTRIBUTORS

Contributions to Āryavaidyan are requested to be made in the following format:

- The article should be authentic and not published earlier.
- Contributions in the form of a research paper, review article, clinical observation or a book review are welcome from the fields of Āyuṛveda and allied subjects, naturopathy, Siddha, Unani, Homoeopathy, Yoga, Modern medicine, drug research, pharmacognosy, botany, phytochemistry and pharmacology. Publication will be made on the basis of the recommendation of an expert body.
- The main title, indicative of the content, should be brief. An abstract, not exceeding two hundred words, be prefixed to the article. English equivalents may be provided to Sanskrit terms [e.g. vīrya (potency), guṇa (property), etc]. Correspondence address including e-mail, and affiliations, if any, of the author be attached to the text.
- Tables, minimized to the extent possible, with suitable reference to the context can be attached to the matter.
- Line drawings/pictures accompanied by descriptive legends may be submitted in original. Figures may be numbered and referred to in the text as "Fig 1" etc. (In the case of e-mail, the figures have to be attached as JPEG images)
- Reference matter may be arranged in the following order - Author, Text, Edition, Publisher, Pages and Year, etc. Example:

  1. John Bernar Hentory, *Clinical diagnosis and management by laboratory methods,* 17th Ed., WB Saunders Company, Philadelphia, pp 172-175, 1989.

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Printed at Premier Offset Prints, Kozhikode and published by Aryavaidyan P.K.Warrier, Managing Trustee, Arya Vaidya Sala, Kottakkal for and behalf of Arya Vaidya Sala, Kottakkal.
Editor: Dr. M.R. Raghava Varier. Typesetting: Department of Publications, Arya Vaidya Sala, Kottakkal.