CRITICAL REVIEW OF EFFICACY OF PANCHAKARMA IN PREVENTING DISEASES THROUGH THE WAY OF IMMUNITY (STRESS RESPONSE HORMESIS)

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ABSTRACT

Panchakarma has Samshodhana as a main objective. Four out of five procedures expel the humours for purificatory purpose. Though all the procedures are different in methods, they are tied in one bunch. It indicates they are something very common among them. It probably is the nature of their action. Panchakarma procedures are Apakarshana (scrapping) in nature. They are quite stressful in nature. They create a lot of stress over the metabolism during their course. Any type of stress over the body invokes immunity response from the body. This immunity work is carried out through the ways of endocrinal secretions, lymphocyte mobilisation or response to inflammation created by the stress. So there are a lot of chances that Panchakarma procedures might be stimulating the immunity system to reduce the ailments by producing a lot of antistress metabolites in the blood stream. This can be understood if studied the “Stress Response Hormesis”.

Keywords: Panchakarma, Samshodhana, immunity

INTRODUCTION

“Panchakarma” is the special term used by Charaka which includes five specialised procedures viz Vamana (Act of Vomiting), Virechana (Act of purgation), Niruha Basti - Anuvasana Basti (Acts of medicated enema) and Nasya (Act of medicated nasal instilation). In medical sciences, there is an established pattern of treatment. The whole part of treatment is divided in two broad categories viz Medicines and Surgery. Diseases are cured by giving medicines or correcting by surgical intervention. Panchakarma is the way of curing the ailments in a slightly different manner. It definitely does not fall in the category of Surgery. It is not the medicinal way of treating the diseases too. So it definitely holds some different way of action over all the systems.

Role of Panchakarma in prevention of Diseases -

A. Role in preventing the diseases already cured -

“The treatment modules like Langhana-Pachana-Rukshana-Stambhana etc. though might be helping to pacify provoked humours and decrease the quantity of
humors significantly, they are not that much effective as that of Panchakarma. Former modules of treatment as explained above may be helpful in decreasing the diseases by passifying the humors, but the residual humors after the treatment may get provoked immediately if they got the boost from the similar properties to them gained from causative factors. But the humors if passified or removed by Panchakarma may not get provoked with same strength again. The disease passified by the treatment of Panchakarma becomes ‘Apararbhava’ means it will never occur again once cured by Panchakarma treatment.

B. Role in prevention of the diseases

“If one pursues Vishamaswasthavrutta, it will create diseases and if one follows swasthavrutta, one will enjoy Aroga. So everybody shall pursue swasthavrutta to be fit and to stay healthy. In the months of Chaitra-Shravana-Margashirsha, respective humors like accumulated Kapha-Vata and Pittas shall be expelled from the body by appropriate procedures. After obtaining proper Oleation- Sudation, one must remove humors from upper and lower routes of the body (i.e. Vamana and virochana). Following that one should perform Basti and Nasya. This must be followed in an appropriate way and in appropriate sequence. The person who knows the management is according to ‘time’ must use approved medicines from Rasayana and Vrushya categories.

“The person who follows the above cited process will never get affected by the diseases. One’s Dhatu will stay in normal levels qualitatively as well as quantitatively. Dhatu will be strengthened and the person will be able to delay the process of ageing. This system of treatments is explained to prevent the Nija diseases from occurrence.

Panchakarma acts in both the ways that it prevents the diseases to arise in future as well as the diseases which once get cleared shall not appear again too. This function mimics to that of vaccines. “A vaccine” is a biological preparation that provides active acquired immunity to particular disease. It stimulates the body's immune system to recognize the agent as a threat, destroy it, and keep a record of it, so that the immune system can more easily recognize and destroy any of these microorganisms that it later encounters. Thus, Panchakarma might be working on the lines of Immunity over the whole body. One must try to understand the hypothesis on the basis of five logical steps which lead to establish a ‘Sadhanta (Principle)’ viz. Pratidnya-Hetu-Udaharana-Upanaya-Nigamana as follows.

Aims and Objectives (PRATIDNYA):
1. To study the nature of action of Panchakarma over the body.
2. To study the effect of stress over the immunity and overall physiology of the body.
3. To study the beneficial effect of stress through the procedures of Panchakarma over the body.
4. To establish the process of “Stress Effect Hormesis” through Panchakarma.

Materials:
1. Literary review of various definitions, nature, indications and effects of Panchakarma.
2. Literary review of stress Response hormesis, physiology of immunity, published experiments done to evaluate the effects of stress over the body.
Methods:
1. Role of Panchakarma in prevention of the diseases were studied.
2. Collection and analysis of all the references were done.
3. The collected data of references was compared and processed logically to verify the concept and to arrive at conclusion.

OBSERVATIONS:
HETU - Logical thought behind the Hypothesis - Effect of Panchakarma over physiology - Panchakarma procedures need strength of the body to face the removal of provoked and quantitatively huge Humours from the body. They are done with caution after excluding all the burdening pathologies which might put stress over the body. If done excessively, they might create harm or it is said they are bound to create complications if anyone of the doctor-Medicines-Patient and Nurse performs a mistake. So Panchakarma do definitely put stress over the body. It can be perceived from the following examples too.

1. “After removal of provoked humours and bloodletting, Vata might get aggrivated immediately occupying the ‘Shudha Koshtha’ (evacuated Gastro intestinal tract) in a ‘weakened patient (of Kushtha)’. So he must be supplied with enough quantity of strength (Bala) through the way of unctuous material”. So, this narration indicates that ‘Shodhana (Purificatory) procedures’ put “stress over the body” which may deplete the strength.

2. Four out five processes are included in ‘ten types of Langhana (Fasting) way of treatment (Chatusprakara Samshudhi)’. Langhana brings lightness to the body tissues. This will not happen without excreting extra or excess humours are removed from the metabolic system. So Langhana basically improved excretion by fastening catabolism.

3. These procedures create “kshobha” inside the physiology of the body. There is a lot of turbulence inside the body whenever these procedures take place inside the body. They definitely influence the physiology. These processes put a lot of stress over the normal mechanism. Throwing away the humours is the apparent thing. But at the backdrop of these procedures, metabolic rate gets increased. Increase in blood pressure, pulse, temperature during the process of Vamana is the indication of the turnover of the metabolites taking place during the processes.

4. Even during explaining the treatment after shodhana especially by Virechana in “Chikitsa prabhrutiya”, the expression is used for the effects over the body in the words as “Bheshaja Kshapite”. So the effects after using the Samshodhana medicines over body are considered “weakening” of the body. In the present context - Just like weakening of provoked humors, as a result of Samshodhana; weakening of Dhatus also takes place.

So during shodhana, along with provoked humours, there is a loss of Dhatus too. It results ultimately in weakening of the patient for some time. It is not automatically corrected and needs further attention of the physician. The weakened body of the patient is further replenished with the “Pathyakara Ahara, the food articles like Ghee-mutton soup-
milk-soup of lentils along with food which will be good to heart. All these food articles must be of Brumhana properties. This treatment is accompanied by Gentle body massage with oils-pastes, bathe – Anuvasana and Niruha Basti. All these treatments will provide good health and longevity to the person."

5. It is precisely made clear while stressing the importance of Snehana and Swedana before Panchakarma. Both Snehana and Swedana are useful in preventing aggravated Vata which ultimately is increased due to “irritation or turmoil or turbulence caused by Panchakarma.” The said citation proves that Panchakarma procedures ‘put stress over the physiology’ and by compelling body to remove the stagnant material - which already has become burden to the body.

6. It is advised to keep a gap of seven days in both the treatments viz. Virechana and Basti. One shall not administer basti after finishing the complete procedure of Virechana. He also claims in reverse too that one shall not be allowed to undergo Virechana process before seven days after completion of Basti treatment as these processes do ‘Injury or Harm to the body’. Chakrapani clarifies the term ‘Vikaset’ as Vikaset iti Himsayam. “Himsayam” literally means ‘violence or physical injury to the body.’

7. The word “Vikas” is made from two roots “Vi + Kas.” The root ‘Vi’ is used in a lot of ways. It sometimes intensifies that idea. So, the word ‘Vi-kas’ means to burst, become split or divided. So the process makes the split divide bursts intensively. From above inferences it must be understood that Panchakarma creates stress over the body. Strenuous procedures like Samshodhana treatments involve all the cells and channels inside the body and make them ready to expel the provoked humors from the system by the nearest route as possible.

**Role of stress in Human physiology**

Stress can have many profound effects on the human biological systems. Biology primarily attempts to explain major concepts of stress using a stimulus-response paradigm, broadly comparable to how a psychobiological sensory system operates.

When a stressor acts upon the body, the endocrine system is triggered by the release of the neurotransmitter noradrenalin by the autonomic nervous system. Noradrenalin stimulates the hypothalamic-pituitary-adrenal axis (HPA) which processes the information about the stressor in the hypothalamus. This quickly signals the pituitary gland and finally triggers the adrenal cortex. The adrenal cortex responds by signaling the release of the corticosteroids cortisol and corticotropin releasing hormone (CRH) directly into the bloodstream. During an alarming situation in which a threat is detected and signalled to the hypothalamus from primary sensory and limbic structures, cortisol is one way the brain instructs the body to attempt to regain homeostasis – by redistributing energy (glucose) to areas of the body that need it most, that is, toward critical organs (Heart & Brain) and away from digestive and reproductive organs, during a potentially harmful situation in an attempt to overcome the challenge at hand.
**Hormesis** -

This whole phenomenon may be called as “Stress response Hormesis. Hormesis refers to the beneficial effects of a treatment that at a higher intensity is harmful. In one form of hormesis, sub lethal exposure to stressors induces a response that results in stress resistance. The principle of stress-response hormesis is increasingly finding application in studies of aging, where hormetic increases in life span have been seen in several animal models\(^\text{22}\). The principle of “Stress-response hormesis” can be seen in action in many contexts. E.g. Low levels of insecticides can induce chemical resistance by increasing xenobiotic detoxification (Calabrese et al., 1999). Or induction of drug metabolizing enzymes by xenobiotic chemicals can provide protection against carcinogenesis (so-called chemoprotection) (Talalay et al., 2003)

**UDAHARANA (Example to prove the hypothesis)—**

An experiment\(^\text{23}\) was performed on rats, in which they were subjected to mild stress by confining them (gently, and with full ventilation) in transparent Plexiglas enclosures to induce stress. Blood was drawn several times over a two-hour period and, for each time point, measured levels of three major hormones — nor epinephrine, epinephrine and corticosterone (the rat analog of cortisol in humans) — as well as of several distinct immune-cell types in the blood. It caused a massive mobilization of several key types of immune cells into the bloodstream and then onto destinations including the skin and other tissues. This large-scale migration of immune cells, which took place over a time course of two hours, was comparable to the mustering of troops in a crisis. Similar immune-cell redistribution in patients experiencing the short-term stress of surgery predicts enhanced postoperative recovery.

**UPANAYA:**

Action of Shodhana through stress mechanism - Samshodhana treatments have the nature of “Apakarshana.” The word ‘Apakarshana’ has the meanings\(^\text{24}\) (MW 48) like forcing away, removing-diminishing-dragging down and abolishing. Even the word “Karshana” in it, is having the meanings\(^\text{25}\) (M W 260) like pulling to and fro, dragging, tormenting, vexing, pulling off, trigging, hurting, injuring, ploughing.

During any type of Samshodhana, when one administers a large amount of decoction of medicines inside the gastrointestinal lumen, it causes irritation in the mucous membrane of GIT. During the forceful removal of accumulated humours repeatedly for evacuation, it scraps the mucosal layer over the gastric mucosal surface. This stimulates a series of several steps by the defense mechanism of the body, to protect, further damage, through the means of inflammation.

These types of changes may compel cortisol to be secreted in large amounts during the process of any type of Samshodhana. Actually cortisol is secreting to achieve immediate effect of blocking most of the factors that are prompting the inflammation. But in addition the rate of healing is enhanced. This probably results from the same, mainly the undefined factors that allow the body to resist many other types of physical stress when large quantities of cortisol are secreted.\(^\text{26}\) Thus, by this path Samshodhana procedures might be helping to root out many ailments with the complex pathogenesis. Following is one of the examples to comprehend the action of Samshodhana.
Kushtha (Skin disorders): In the modern medicine, cortisol has been used mostly for topical application for a longer period and for systemic use up to shorter time in the cases of skin disorders. Cortisol is helpful but needs a longer duration in chronic cases. So, one dose of steroid or secretions of the same for only shorter tenure are not sufficient. So, Vamana must have been suggested after every 15 days, Virechana after every 1 month, Nasya for every 3 days and Rakta-mokshana once in six months in the treatment of Kushtha.27 Thus, an extra cortisol secreted through single procedure may not provide the sufficient amount of cortisol. Hence repeated purifications are suggested so that the body will get enough doses within a shorter period. Body will fulfill the needs of remedy from time to time.

DISCUSSION
The working pattern of Samshodhana is just like this only. Immunity starts working hard when any stress is apparent over the body or any open threat to the body. Immediately it starts producing very strong metabolites in the form of WBCs – Lymphocytes – Monocytes- Tcells- Bcells- Helper cells etc. So it will not be so untrue to claim that Panchakarma might be working slightly on the terms of the ‘system of Immunity.’ Panchakarma might be yielding its effects by creating physical stress to the body and igniting defence response by challenging the immunity to fight against it (The process of “Stress Response Hormesis”).

CONCLUSIONS
1. Samshodhana procedures need strength of the body i.e. BALA to perform them. Weak patients (DURBALA) cannot bear them.
2. They purify the body by improving or fastening the catabolism of the body.
3. They create physical insult or injury to the body which ultimately challenge the immune system to react and fight the attack. Thus “awakening the body immunity” might be the way of proving its efficacy.
4. Thus procedures in Panchakarma work in the similar way of ‘Stress Effect Hormesis’.
5. These processes must be boosting immunity through putting stress over the physiology in the body.

REFERENCES


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