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RESEARCH ARTICLE

“PHARMACODYNAMIC UNDERSTANDING OF KATIBASTI” - A CONTEMPORARY APPROACH.

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Abstract

Katibasti is one of the popular practices of Panchakarma as bahi parimarjan chikitsa (external procedure) in Ayurveda. It is a type of snigdha sweda. This is a combo therapy comprising of Synchronized snehana and swedana. Entire effect of Katibasti depends on the duration of procedure, surface area occupied and medicament used. The mode of action of drug i.e. pharmacodynamics depends on the phases involved in pharmacokinetics. In Ayurveda, Acharya Sushruta has explained the mode of action of external procedures with keen observations. Acharya Charaka says that the drug acts not only by virtue of qualities i.e. Virya but also with dravya prabhava, gunaprabhava and both. Dalhana also described that absorption and penetration depends on the duration and area covered. In this paper, emphasis has been made to explain the pharmacodynamics of kati basti as per Ayurveda in correlation with modern Science.

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Introduction:-

Ayurveda being an age old health science with scientific therapeutic principles, treasure of thousands of potent drugs and therapies act in many ways such as Prophylactic, Palliative, curative and supportive. Panchakarma is an integral part of Ayurveda. Katibasti is one of the popular practices of Bahi parimarjana chikitsa (i.e. external procedure). It is a type of snigdha sweda.

Katibasti is originated from the word basti means to reside or to hold or the compartment which holds on Kati pradesha (lumbosacral region). It is the procedure in which medicated oils are poured and pooled on kati pradesha for a fixed duration of time with uniform temperature. Katibasti is a combo therapy comprising of synchronized snehana and swedana. It helps to relieve the inflammatory changes, to release the spasmor to strengthen the supportive tissues holding the spine, nourishing the joints through improving the circulation. The structures involved at lumbosacral region are nerves, muscles, vessels, articularies etc.

Modern science believes that the drug is effective at certain area only when it reaches their with proper kinetics.

Acharya Sushruta while mentioning “Dhamani vyakarana Sharir” highlighted the route through which absorption and penetration of external procedures will occur. Tiryakgata dhamanias (Subcutaneous vessels) are the mediators

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for absorption and penetration of medicaments from the surface of skin upto Kha-vaigunya or samprapti sthana or mula sthana of vyadhi through bahi parimarjan chikitsa.¹

The disorders of lumbosacral region suggestive of vitiation of vyana vata and shleshamak kapha kshaya, Katibasti by its snigdha, guru and ushna guna pacifies the increased rooksha, laghu and sheeta guna of vitiated vata as taila (oil) gives nourishment and corrects the sheshmaka kapha. So it is the time to get the thorough knowledge related to the mode of action of Katibasti.

Discussion:-

Pharmacodynamics is the branch of pharmacology concerned with the effect of drugs and the mechanism of their action. Pharmacokinetics is the study of the way in which drugs move through the body and the time course of drug absorption, distribution, metabolism and excretion etc. with its biochemical and physiological effects of drugs and the mechanisms of their action.⁴

1. Absorption of the drug
2. Distribution of drug molecules
3. Metabolism of the parent drug
4. Excretion or elimination of the drug and its metabolites.

Absorption:-

1. It depends on the blood flow to the absorption site. Better the blood supply to the area, greater the rate of absorption. Therefore, if the part has good circulation, the ability of drug for absorption is good.
2. Greater the surface area, greater the rate of the absorption.
3. Time of arrival and the contact time at absorption site : The longer period of contact with the absorbing surface, greater is the rate of absorption.
4. Physio-chemical factors relate to the chemical make up of the drug in relation to human physiological function.
5. Drug action depends on route of administration, rate of absorption and manner of distribution.⁵

This fact has been observed and explained even in the era of Acharya Sushruta and Charaka.²

Proper circulation is the prima factor essential to achieve adequate nourishment and functioning of every tissue. One of the circulating channel mentioned in Ayurveda is 'dhamani'. Acharya Sushruta explained origin, course, branching, numeration and specific functions of dhamani in 9th Chapter of Sharir-sthana i.e. "Dhamani vyakaran Sharir".

Tiryakgata dhamani reaches upto the skin by dividing hundreds of branches and thousands of sub-branches and then become immurable. Their openings are attached to hair follicles(romakupa). Through these follicles they carry sweda(sweat) and replenish rasa inside and outside. This principle mentioned by Sushruta itself is the explanation for mode of action of external procedures like Katibasti also.¹

Procedure Of Kati Basti (Kati Tarpana):-

Katibasti is one of the varieties of Snigdha sweda. It is safe and gives quick relief to the patient.

Being an external therapy it has no side effects and complications. It gives immediate results as it acts at the site of lesion and pacify the vata dosha by producing snehana (lubrication) as well as swedana (Sudation)

Materials:-

- 1) Masha powder (Black gram powder) – ½ kg to 1 kg.
- 2) Oil (according to disease indications) – 200 ml to 500 ml.
- 3) Plastic or Steel ring – (2" height and 18-20" circumference)- Katibasti ring of different sizes)

Investigations:-

Patient must be asked to come with lumbosacral x-ray or MRI to specify the location for Katibasti.

Poorva Karma (Pre-operative Procedure) :-

Patient should be asked to evacuate urine and stools before coming to the table.

Pradhan Karma (Operative Procedure):-

Patient should be asked to lie down on the table in prone position. First we have to clean the lumbar region with cotton where we are applying Katibasti. Masha dove is made into a ring shape and fix the ring on the lesion. Then pour lukewarm medicated oil with the help of cotton and kept for 30-45 minutes duration. The uniform temperature of the oil must be maintained constantly during the treatment.

Oil should be replaced after 3 – days or new oil should be added daily.

Paschat Karma (Post operative Procedure):

After the completion of the treatment, first remove the oil and then masha pishti and clean the area with cotton. Mrudu samvahana (oil massage) to whole body or lumbar region, buttocks and legs should be given without applying pressure. After massage Nadi swedana or Rooksha sweda should be given according to need.^{9c}

Patient should be asked to take comfortable position and rest for another half an hour. The patient should not be exposed to the air directly and advised to take rest in supine position on hard bed.¹⁰

Patient is advised to take Gandharv hastadi Kashaya or Gandharv haritaki choorna or any mild laxative to evacuate the bowels.

Mode Of Action:-

Mode of action depends on the selection of proper area for procedure, base oil, medicament used, duration of contact of oil with area of application, amount of oil placed, duration of procedure and temperature of oil applied.

According to modern science, relief from the treatment is nothing but drug efficacy. Effect of drug depend on pharmacokinetic as well as pharmacodynamics. Whatever may be the route of administration, drug must achieve desirable concentration at particular area. For this purpose, penetration must be proper.

Generally, the disorders for which katibasti is indicated are located in Katipradesh i.e. superficial or deep. Effect of treatment should reach upto the area of pathogenesis.

We can explain the effectiveness of katibasti with the help of pharmacokinetic and “Tirayak dhamani” sharir by Acharya Sushruta.¹

1. Absorption through Twacha via Romakupa
2. Vasodilatation
3. Dhamani involved in “Poshana” i.e. (nutrition)
4. Temperature alteration act on nerve endings.

From the site of application of katibasti, oil should be absorbed properly to reach beneath skin. Skin allows penetration depending on molecular size of the ingredient, concentration, solubility etc.

In katibasti, whichever oil is used, base oil is Sesame oil. Sesame oil is well absorbed and penetrated to deeper tissues.⁶ Acharya Sushruta stated – Romakupa (hair follicles) are attached to the tiryak dhamani (oblique arteries and subcutaneous arteries)

Topical medications or applications can lead neuronal stimulation. Katibasti also reduces pain when applied to pathogenic area. This action may be via neuronal stimulation.

Longer duration of kati basti (about 30 to 45 minutes) causes prolong hot fomentation leads to secretion of acetyl chloride. Warming exhibit sedative effect via sensory nerve endings and promotes vasodilation which later causes reduction in muscle spasm related to tonic muscle contraction and pain. Hot fomentation and absorption of oil through dermis causes vasodilation which increases blood circulation and nutrition to the tissue.⁸

Dhamani can considered as nerve as well as artery. Dhamani is one which is pulsatile in nature suggests it as Artery. Dhamani which does vayu purana can be considered as Nerve.¹

Action on Nerves:-

Hot fomentation acts as stimulant for less than 5 mins also act as sedative.

During fomentation, WBC activity increases, long duration of fomentation causes secretion of acetylcholne. Efficacy of fomentation noted in psychosomatic pain also.

Increased temperature → Increased Antibacterial activity → Increase in internal temperature → Increase in metabolic activity → Increase in repairing of cells.

Effect of temperature :-

When temperature of skin surface rise by 10⁰C, inner temperature increases upto 3⁰C. Temperature maintained during katibasti is 40⁰C to 50⁰C.^{9a}

Vasodilation:-

Hot fomentation causes dilatation of the vessels and induce hyperemia. Experimentally, it has been shown that short time fomentation is efficacious in inflammation.

Due to fomentation, capillary pressure increases and decreases the congestion of internal organs. Sweating eliminate the toxins and tissue relaxes. This results in decrease of spasm and pain.

Increased peripheral circulation provides transport to help to reduce oedema which can help in inflammation. Decreases pain and helps in speedy healing.

Increased sweat → increases elimination of toxins and waste product → tissue relaxation → decrease spasm and pain.

1. External hot fomentation with oil causes irritation to the receptor in nerve endings causes immergence of new biological substances lead to increased metabolism and does nutrition.
2. These biochemical substances act on vessels in subcutaneous and skin area leads to release of histamine or adrenaline.
3. Massage (mrudu samvahanam) reduces the activities of proteins called inflammatory cytokines and thus reduces pain and inflammation.^{9b}

Conclusion:-

Katibasti is the form of snigdha sweda exert, both effects i.e. by means of action of oil as well as hot fomentation. Mode of action of katibasti by absorption, penetration, neural stimulation, vasodilatation and anti-inflammatory activity. Acharya Sushruta quoted the mode of action of all external procedures (so it can be understood in the same way for Kastibasti also) while explaining the functions of “tiryakgat dhamani”.

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