

Review Article on Agnikarma

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Abstract: Salyatantra is one among the important and vital branches of Ayurveda, which consists of various surgical and para surgical procedures. Agnikarma or thermal cauterization is the foremost among these para surgical procedures. It means application of heat to the body part directly or indirectly with help of different materials to prevent or to cure a disease. It is a potent and minimally invasive para surgical procedure which has wide application in chronic conditions as well as in emergency management. Agnikarma has been given special place in surgery by Susruta and the disease treated by Agnikarma never reoccurs. Clinically it is considered as prime para surgical procedure and it provide relief in certain diseases which are not cured by herbal medicine, surgical interventions and alkaline cauterization. Based on specific heat retention and transmission capacity of different substances acharyas had prescribed different materials for cauterizing specific body parts. Most commonly Agnikarma is indicated in neurogenic pain, tendinopathies, or in diseases of skin, vein, ligament, bone or joint where pain is an exclusive factor. The preventive, curative and haemostatic properties of Agnikarma were known even centuries back.

Keywords: Agnikarma, Cauterization, Para surgical measures

INTRODUCTION

Agnikarma means procedure done with fire. References about Agnikarma are available in almost all Ayurvedic classics. Its preventive, curative and haemostatic properties were unveiled even centuries back. These same principles are adopted in advanced technologies like cauterization, diathermy, radiation therapy, laser therapy, starrion device etc. Clinically Agnikarma is the prime para-surgical procedure, to treat chronic diseases, which are mostly difficult to manage because of the antagonistic property of doshas, like disease caused by vata and kapha. Agnikarma can be done in all seasons except autumn and summer due to the increase in pitta, which generated out of the excessive hot climate.¹ Dalhana opines, in an emergency, even in any season it can be done. But precautions like covering the site with moist clothes, having cold foods and smearing cold pastes over the body has to be adopted, so that the pitta

vitiation can be countered by the cold applications. Most commonly Agnikarma is done in neurogenic pain, tendinopathies or in diseases of skin, muscle, vein, ligament, bone or joint where pain is an exclusive factor. It is also suggested in hyper-granulated neurogenic ulcers, sinuses, tumor, haemorrhoids, fistula-inano, warts, moles, trauma to joints and veins². Agnikarma is earmarked for its haemostatic properties as well. But in internal haemorrhage, multiple wounds and in rupture of internal organs it should not be practiced. Fearful persons, old aged, debilitated and children are also exempted because of their weak mental strength and persons with dominant Pitta traits of taits of the body (pitha prakruthi) and in unretrieved foreign body which is a potent source of infection, the persons contraindicated for swedana are contraindicated for Agnikarma as it causes further vitiation of pitta. Based on the part where cauterization to be done and the ability of a material to retain and transmit heat energy, different instruments are enumerated by the ancient physicians. Substances which can retain less heat and can transmit lesser amount of heat energy are indicated for skin (twak dagdha) like piper longum, goat's, cow's tooth, wooden arrow and shalaka. Substances which can retain more heat energy and can transmit it to further deeper layers are used for burning the muscles, tendons and ligaments. For e. g jambavoshta (a stone carved in the shape of Eugenia jambolana Lam.) and metals are used for transmitting the heat energy to the level of muscles and honey, jaggery or other viscous materials like oil, fat etc. are used to transmit the heat energy to ligaments, tendons or blood vessels.³ Different Acharyas are having some difference in opinion regarding the instruments to be used. involvement of tissue as twak dagdha (Skin burn), mansa dagdha (muscle burn), Sira-snayu dagdha (burn of tendon and vessels) and asthisandhi dagdha (burn of bone and Joints).

AIMS AND OBJECTIVES

The aim of the present study was to study in detail about Agnikarma and its clinical applications in shalya tantra.

MATERIALS AND METHODS

The materials were collected from the classical ayurvedic literature, magazine's and research journals. Dahnopakarana used for Agnikarma^{4,5} In classics, there are different Dainopakarana, have been described during the descriptions of disease cured by AgniKarma. Dahnopakarana means accessories like drugs, articles and substances used for AgniKarma. Each of them is having their own peculiarity in Dahnopakarana. Pippali, loha suchi varti tamraaja jambu sneha majja rajata shakrit godanta ghritha yashtimadhu kansy ect. Objects are used for Agnikarma. Acharya Charaka has described various Agnikarma Sadhana for Sukumar and Asukumar out of these Ghritha, Taila, Vasa, Majja, Wax are to be used in Sukumar person and Lohashalaka and Madhu in Strong person. Objects used in Agnikarma according to disease condition⁶ Twak Dhatu (skin): Pippali, Ajashakrit (Excreta of goat), Godanta (Cows teeth), Shara (Arrow head), Shalaka (Metal rod)- Loha Shalaka i.e. made of Iron. Mamsa Dhatu (muscle): Jambavoushta: a piece of black stone made like a Jambuphala (fruit of Syzygium cumini, Eugenia jambolana Lam), Rods of other metals like Tamra, Rajata etc are used. Sira, Snayu, Sandhi and Asthi Dhatus (vessels, ligaments, joints and Bones): Kshaudra or Madhu (Honey), Guda (Jaggery), Sneha-Ghritha, Taila, Vasa and Majja.

MODE OF ACTION

- Agnikarma is suggested for disorders that are mostly caused by Vata and Kapha vitiation. It eliminates Srothorodha, regulates vitiated Vata and Kapha dosha, and maintains their equilibrium because of the Ushna, Sukshma, Teekshna and Aashukari Guna of Agni.
- The effect of Agnikarma is in two ways i.e., one for Roga Unmulana and the other for pain management. The Ushna, Teekshna, Sookshma and Aashukari Guna of Agni pacifies Vata and reduces Kapha which ultimately leads to Vedana Shamana. An example of Roga Unmulana action of Agnikarma is seen in surgery. By creating a mechanical burn that causes a thermal damage helping in the elimination of vitiated tissues on the wound surface. As a result, it aids in the healing of chronic wounds.
- Agnikarma removes Srothorodha and Aavarana at the corresponding site there by increases Rasa Raktha Samvahana to the affected part. Due to increase of blood circulation, it removes the pain producing

substance and inflammatory mediators from the site and thereby causing reduction of signs and symptoms.

- Because of Laghu, Sukshma and Teekshna Guna of Agni, it can penetrate deeper into the Dhathus. As a result, Dhathwagni increases so metabolism of Dhathu becomes proper and digests the Amadosha from the affected site and promotes proper nutrition from the Purva Dhathu. So, in short Amapachanam occurs which in turn remove Srothorodhamand pacify of Vata. A review on agnikarma and its probable mode of action The precise mechanism of Agnikarma is not known. It acts on a multi factorial level in the body. The probable mode of action of Agnikarma can be explained through the theory of pro inflammation, theory of thermodynamics and gate theory. According to proinflammatory theory, induction of an acute inflammation will gather a greater number of lymphocytes, neutrophils, histamines and prostaglandins to the site and resolves the chronic inflammation present at the site. The theory of thermodynamics states that when thermal energy is transferred from an object to a tissue, the tissue's internal energy increases and heat energy is sent to the cells. To disperse this concentrated rise in body temperature, the body's thermostatic centre is quickly triggered. Vasodilation consequently takes place, increases blood flow. There by the inflammatory mediators removed from the site. The probable mode of action of Agnikarma can also be explained through the gate control theory of pain .According to gate control theory of pain, a non-painful stimulus can block the transmission of a noxious stimulus or painful input which prevent transmission of pain traveling to brain. That means stimulation of nonnoxious stimuli is able to suppress the pain. Here by the application of heat, pain got suppressed. Heat may also activate the analgesia system of spinal cord. The analgesia system can block pain signals at the initial entry point to the spinal cord. In fact, it can block many local cord reflexes that result from pain signals. So, in a nut shell Agnikarma increases metabolism, blood circulation, decreases pain and excitation of nerves, causes relaxation to muscles, decreases infection, stop hemorrhages, decreases joint stiffness and inflammation.

MODERN CONCEPT ON CAUTERIZATION

According to modern medical practice thermal cauterization is the deliberate destruction of tissue by the local application of heat using an instrument known as a cautery. Cauterization can be done using

heated probe, an electrically heated wire loop, a high frequency electrode or a laser. It helps to stop bleeding, remove an undesired growth or minimize other potential complications such as infections. Various types of cauteries are electric cautery, cryo cautery, gas cautery, solar cautery, paquelin's cautery etc. Based on the depth of the skin, heat treatments can be superficial or deep. Superficial heat can be applied in many forms such as chemical hot packs, paraffin, heat lamps, hot water bottles, heat pads and warm packs. Deep treatment include ultrasonography and diathermy. Ultrasonography directs sound waves that are absorbed by various tissues and converts to heat energy. Diathermy uses high frequency electric current.

DISCUSSION

Clinically Agnikarma is the prime parasurgical procedure. Disease treated by agni will not recur again and is useful in treating chronic diseases. Due to its hot potency (Ushna veerya) and penetrating property (Tikshna ushna guna), it gives good result in Vatha kaphaja diseases, which are mostly difficult to manage because of the antagonistic property of doshas. And because of its Ushna veerya always there exist a possibility to vitiate the pitta and raktha inturn. Inorder to avoid this Acharyas have wisely given an advice to exempt the use of Agnikarma in the months of sarath and greeshma. While discussing about the contraindications an important area is regarding the Swedaanarhas. Those include obese, with predominant dryness in the body, debilitated, vata dominant condition, cataract, anemia, ascitis, herpes, cellulites/ erysipelas, other skin diseases, diabetes, alcoholic intoxication and poisoning . In conditions like anemia, toxicity, alcoholic intoxication, erysipelas, cellulites and in skin diseases Agnikarma will cause further pitta vitiation. In diabetic patients it can delay the healing of the wound produced. In debilitated due to low mental and physical strength he cannot withstand the thermal cauterization. Even though Acharya Susrutha has explained three types of dagdha, a difference in opinion exist among a few Acharyas. According to Kashyapa it is not necessary to do sirasnayu sandhiasthidagdha as it can lead to complications like excessive bleeding. Acharya Bhadra shounaka gives another opinion that when twak dagdha is done the thermal energy is transmitted to mamsa dagdha and when mamsa dagdha is done the heat energy is transmitted to sirasnayu –sandhi and asthi. This suggestion can be substantiated from our routine clinical practice of cauterizing the skin at the

heel in Achilles tendinitis. Panchadhatu salaka a recent innovation of Prof. P D Guptha is widely used for all types of cauterization. It is having 40% of copper, 30% of iron and silver, zinc, tin 10%, each. It can transmit more heat energy to deeper tissues with minimum tissue injury. The concept of panchadhatu/loha is mentioned in ancient text book of 'shilpashastra' (<https://en.m.wikipedia.org/wiki/panchaloha>). These are the five metals present in human body. Studies have revealed that many individuals lack some of these metal components in the body. Agnikarma by this shalaka can help in refilling the components to bring stability and positivity in life. It can help in balancing the life force or pranashakthi. The wonders created by agnikarma in clinical practice often make us spellbound. At times it produces instantaneous relief of chronic pain, tissue cutting, coagulation, blending, fulguration or wound healing. The actual mechanism of action of agnikarma still remains as an enigma to the medical community. Several theories can be adopted to explain these mechanisms but their action varies according to the condition. The theory of pro-inflammation- according to which the induction of an acute inflammation will gather more amount of lymphocytes, neutrophills, histamines and prostaglandins to the site and rectifies the chronic inflammation present at the site. The theory of thermodynamics applied upon a biological system- suggests that when thermal energy is transferred from an instrument to a tissue its internal energy increases and the heat energy gets transferred to the cells. The thermostatic centre of the body immediately gets activated to distribute this localized rise in temperature throughout the body. As a result vasodilatation occurs and blood flow increases. According to Vant Hoff's principle the basal metabolism of the body increases by certain percentage for every 10 rise in body temperature ([https://en.m.wikipedia.org/wiki/Van't Hoff Equation](https://en.m.wikipedia.org/wiki/Van't_Hoff_Equation)). Rise in temperature induces relaxation of muscles & hence muscles spasm with inflammation and pain gets reduced. Muscles relaxes most readily when tissues are warm which in turn reduces the spasm, inflammation and pain Contact inhibition theory: This theory may be applicable to the action of agnikarma in curing black mole or wart in skin. The theory suggests that when there is contact between adjacent cells, the cells do not divide due to a limiting factor known as "contact inhibition ([elitehealthcare.biz>starion-products](https://www.elitehealthcare.biz/starion-products)). So when skin cells are cut, the contact is lost since a gap is formed. This is how healing works, the cells will divide until they contact each other again; at that point contact

inhibition correct the pathology. Coagulation of blood through cauterization involves the application of energy to denature tissue proteins, so that these proteins essentially become sticky and form a coagulum or clot. At the molecular level what happens is that the applied energy changes the three dimensional conformation of tissue proteins so that the protein chain is unraveled. This unraveling of the protein chain exposes hydrogen bonding side groups, in this unraveled state new hydrogen bonds can form not between groups on the same protein chain but between adjacent chains. In essence, these unraveled protein chains get stuck together and form a tangled intertwined matrix of protein strands. This is a physiochemical process and does not involve the biological coagulation cascades of the normal clotting mechanism (https://en.m.wikipedia.org/wiki/contact_inhibition_theory). The gate control theory of pain asserts that non-painful input closes the "gates" to painful input, which prevents pain sensation from traveling to the central nervous system. The thin (pain) and thick (touch, pressure, vibration) nerve fibers carry information from the site of injury to two destinations in the dorsal horn of the spinal cord: transmission cells (carry the pain signal up to the brain), and inhibitory interneuron (impede transmission cell activity) (www.spine-health.com/conditions/motion). Greater the large fiber activity relative to thin fiber activity at the inhibitory cell, so less pain is felt i.e. stimulation by non-noxious input is able to suppress pain. Superficial nerve ending theory: Free nerve endings can detect temperature, mechanical stimuli (touch, pressure, stretch) or pain. Thermal nociceptors are activated by noxious heat or cold at various temperatures. There are specific nociceptor transducers that are responsible for response to the thermal stimulus. The first to be discovered was TRP V1, and it has a threshold that coincides with the heat pain temperature of 42 °C. According to Acharya Susruta agnikarma increases pitta which in turn leads to raktha (blood) vitiation This suddenly leads to burning sensation, blister formation, fever and thirst which may be correlated to acute immune response to burn. (Susruta 2nd edition) Agnikarma is kapavatha shamana due to its antagonistic properties. Ushna (hot), tikshna (sharp), sukshma(subtle) properties of agni remove blockage in channels (srotorodha) and ashukari (quick action) property results in instantaneous relief. In Ayurvedic terms the analgesic action of Agnikarma can be explained as follows. Pain is caused anywhere in the body is due to vata .Skin is one of the seat of vayu;

agnikarma is performed to release the sangha (obstruction) of vayu. Being an Ushna chikitsa it pacifies vata, and thus the pain is relieved immediately. Agnikarma also arrests the pathogenesis of a disease (dosha dhushya vighatana karaka). Because ushna property stimulate the tissue metabolism (dathvagni) and (combustion of the metabolic wastes) amapachana thus remove the avarana. Agnikarma is having the property of sirasankochana by that quality even it helps for rakthasthambhana (haemostasis).

CONCLUSION

The Agnikarma deals with the action of thermal energy in the human body. It is a potent and minimally invasive parasurgical procedure which has wide application in chronic conditions as well as in emergency management. Its applications are widely practiced in modern surgical practice-viz. cauterization, laser, radiation etc. It has a wide number of applications which may be substantiated with numerous theories. New vistas of research should be opened up in this topic for achieving a crystal clear validation of its applications in Ayurveda.

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