

***Basti* Therapy of Elephants According to Sage Palakāpya**

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Abstract. Sage Pālakāpya's elaborate treatise from the 5th or 6th century BC titled the 'Hastyāyurveda' deals with elephant diseases, their remedies as well as elephant behaviour. *Basti* therapy is one of the main treatments in *Ayurvedic* literature, involving the introduction into the body of oils, herbal decoctions or other medicinal liquids to treat diseases. Here I describe *Basti* therapy in elephants, indications for such treatment, and the procedures employed in ancient times, based on the text of 'Hastyāyurveda'.

Introduction

In Asia since ancient times, Asian elephants (*Elephas maximus*) have been used for transport, logging, war and religious purposes. Elephants have fascinated humans for millennia and a vast literature related to their characteristics, diseases and treatment developed in eastern cultures. Elephants in captivity are generally healthy and require few therapeutic interventions. However, when they do become ill, treatment is a serious issue. The large body size of the elephant and dearth of pharmacokinetic studies make determining appropriate medications and dosage for elephants a challenging task (Mikota & Plumb 2003). Aside from the weight of the animal, the size, thickness and density of various anatomical structures can physically hinder drug administration. The single most important factor in administering drugs to an elephant is the animal's cooperation in accepting the medication (Isaza & Hunter 2004). Working around elephants can be dangerous and this is magnified with sick or injured animals subject to increased stress, pain and unusual situations associated with treatment.

In *Ayurvedic* literature *Basti* (known also as *Vasti*) literally means 'bladder' or a 'container' for medications to cleanse and detoxify the body, as in ancient times sterilized urinary bladders of animals were used to administer medications. An enema is defined as a fluid injected into the lower bowel of the patient by way of rectum and

is the commonest form of *Basti* therapy. Unlike enemas, which are used only for evacuating the bowels and cleansing the rectum and sigmoid colon, *Basti* therapy treats the entire length of the colon from the ileocecal valve to the anus and is thus used in treatment of a wide range of disorders of the body. It involves the introduction of oils, herbal decoctions or other liquids through the perineum anus, urethra, vagina and their intravenous or intramuscular administration to treat diseases. Classical *Ayurvedic* texts mention three types of *Basti* namely *Āsthāpana Basti* (non-oily, using herbal decoctions), *Anuvāsana Basti* (oily, with medicated oils or ghee remaining in the body for some time without causing harm) and *Uttara Basti* (upper tract medication that uses a combination of both herbal decoctions and medicated oils). *Basti* therapy is also classified based on the site of administration of enemas such as the head, eyes, chest, abdomen and back.

Most texts attribute the initiation of elephantology to the Sage Pālakāpya (Harbola 2003). Maharshi Pālakāpya's treatise titled the 'Hastyāyurveda' is an elaborate text dealing extensively with elephant diseases and their remedies (Sharma 1894). It runs to about 20,000 or more verses and is in the form of a discourse between king Romapāda and Sage Pālakāpya and divided into four sections named *Mahārogasthāna*, *Kṣudrarogasthāna*, *Śalyasthāna* and *Uttarasthāna*. Here I present gleanings from this text about *Basti* therapy of elephants.

Enema in early Indian literature

The *Suśruta Samhitā* (Bhishagrata et al. 1983) mentions the use of a bladder and pipe contraption in detail and provides an excellent description of administering enemas in antiquity for the treatment of piles. He mentions tubular instruments for this purpose and describes them in his text. Traditional enema equipments consist of a tube (*Vastinetra*) and a bag (*Vastipuṭaka*). The tube is generally made of silver, copper, tin, brass, bell metal, ivory, cow's horn, bamboo or gold in the case of treatment of royals. The bag is made by curing an oval shaped bladder of an animal, then heated with herbal antiseptic solution and rubbed with oil until it is germ free. The narrow end of the bag is heated and secured to one end of the tube and the other end of the tube shrunk so as to enable injection.

The *Charaka Samhitā* (Sharma & Dash 2001) refers to knowledge of administering enemas as he quotes *Dhṛdavaḷa* who in turn mentions that disciples of sage *Ātreya* enquired from him about enemas to be made in case of animals such as elephants, camel, cows, horses, lambs and goats. Similar to *Suśruta*, *Charaka* also mentions the bladder and tube contraption. *Charaka* prescribes buffalo's urinary bladder for goats, sheep, elephants, cows and horses (Mukhopadhyaya 1913). He states that injections into the rectum are done by means of a tube with a membranous leather bag (or sterilized urinary bladder of an animal) tied to one end. The other end of the tube is inserted into the rectum. The *Vasti* (enema tube) is 18 *aṅgulas* (a measure equal to the normal width of a human thumb, approximately 16-20 mm) for elephants and is termed 'Suvasti' in *Charaka Samhitā* (Chapter 11, *Siddhisthāna*).

Charaka states that the basic formulations of enemas consist of rock salt, jaggery, *Indrayava* (*Holarrhena antidysenterica*), *Kuṣṭha* (*Saussurea lappa*), *Madhuka* (*Bassia latifolia*) and *Daśamūla* (combination of ten herbal roots). The additive formulations to the basic enema for elephants are *Aśvattha* (*Ficus religiosa*) *Vaṭa* (*Ficus benghalensis*), *Aśvakarna* (*Shorea robusta*) and *Chitraka* (*Plumbago zeylanica*).

Basti therapy in Hastyaurveda

Sage *Pālakāpya* describes rectal enema equipment for elephants made either of wood or bamboo. The length of the tube is 68 *aṅgulas* for elephants. There should be a projection 12 *aṅgulas* high at the end of the tube for firmly tying the leather bag to the tube. In the context of *Basti* therapy for treating wounds (*Vraṇavasti*), the tubes used for washing wounds of elephants are to be made of copper and shaped like the *Karṇṭaka* flower measuring 16 *aṅgulas* in length. These are called wound syringes. The *Uttarasthāna* (Chapter 5, *Vastidānakathanam*) of the text elaborately deals with enema administration to elephants (Sharma 1894). It states that there are nine kinds of enemas such as those administering oils (*Snehabasti*), to cause increase of digestive fire (*Agnidīpana*), to give strength, that which causes *rasa* to increase, to increase blood, flesh and fat or bone growth, to give strength or to increase marrow and semen.

Sage *Pālakāpya* describes an elaborate mechanism by which an elephant can be secured or laid down in an appropriate position in the *Śalyasthāna* (Chapter 11, *Yantravidhiḥ*) of the text. The measurements of a device known as the *Bāhuyantra* are given which provides suitable arrangements to secure the head, tail, loins and limbs of the elephant during medical treatments. The *Bāhuyantra* also has an arrangement by which its height can be increased on the sides and back. Before beginning administration of enema, it states that the elephant must be tied carefully to the *Bāhuyantra* at an auspicious time amidst a sacrifice performed by Brahmins chanting *Svasti mantras* (hymns for well-being of the elephant). Persons on either side and in front of it should instil confidence in elephant to accept the medication by slowly massaging its trunk and other parts.

[A] *Ophthalmic drug administration* – Administering medications to the eyes is accompanied by enemas administered through rectal route. *Basti* therapy used to relieve tensions trapped in and around the eye sockets and thus treat eye disorders in elephants is termed by Sage *Pālakāpya* as *Netrabasti*. It involves pressing a doughnut ring of flour (dough) around

the eye socket ensuring a good seal with the skin and pouring medication into it. Some eye diseases are cured by surgery whereas some by application of medicated oils to cure affected parts or by administering medications. Placement of medication into the eyes of an elephant must be done carefully. Most trained elephants will permit close visual inspection of the eye, but will close the eye if the medication is placed on the conjunctiva or cornea. Once closed, the ocular muscles effectively prevent manual opening of the eyelid by the *Vaidya* (elephant physician).

The *Śalyasthāna* (Chapter 29, *Pradeśajñāna*) of the text deals with members of the eyes such as eye sockets, the regions above it, pupil, corner of the eye, eyelashes, eyelids, conjunctiva, cornea and angles at the corner of the eyes. The '*Hastyāyurveda*' *Akṣirogādhyāya* (Chapter 18, *Mahārogasthāna*) gives details about the causes and diagnosis of several eye diseases (Sharma 1894). One such disease is *Nāyampreṣi* caused by sleeplessness in the night (Sheshadri 2015) leading to headache, blurring vision and pain in the eyes. Regarding the cure of eye diseases, the text states that the *Vaidya* should tie the tusks and bind the eyes of the elephant, followed by application of a mixture of decoctions of various medicinal herbs, salts, honey or by applying collyrium (*Añjana*) after surgery if needed.

Netrabasti for elephants involves the tying of eyes of elephants using a skin bereft of holes as dealt in *Uttarasthāna* (Chapter 5, *Vastidānakathanam*; Sharma 1894). *Netrabasti* causes sweating in the elephant. By suitable arrangement, the *Vaidya* should administer treatment using specially medicated oils, taking care that the eyes do not go up or down. Similar internal therapy is given through the mouth while pleasing the mind of the elephant by playing music of a flute or a *Vīṇā* (a stringed musical instrument) as well as soft words. After the eyes are treated, the area around the eye sockets is massaged. The elephant is made to sweat out by sprinkling hot water, which eases the stressed optical nerves in the region surrounding the eyes (termed as *Nādisveda*). Sometimes herbal fomentation (application of moist warm compresses) is used to reduce pain and swelling in these regions. This is followed by

taking the elephant for a walk and having brought back, it is offered rice moistened by milk, barley, salt, oleaginous materials and made to sleep.

Netrabasti medications can be small measures of barley gruel and ghee. The elephant is tied to the *Bāhuyantra* and as the medications are slowly administered over the eyes, there is easing of all nerves (*Nādis*). The *Eṣaṇi* (a probe type) instrument is used to pour medications over the eyes. Medication in eyes should not be in excess as then it causes the windy humours in the body to rise upward and cause pain in the anus, obstructing evacuation of faeces. The text therefore mentions the use of suppositories (a medicated dosage form inserted for evacuation of faeces or urine). These suppositories are termed generally as *Phalavarti* (*Gudavarti* if through the anus *Sisnavarti* if through urethra and *Yonivarti* if through the vagina). The essence of *Bṛhati* fruits (*Solanum indicum*), *Apāmārga* (*Achyranthes aspera*), rice, *Nirguṇḍi* (*Vitex negundo*), *Aragvadha* (*Cassia fistula*), *Sahachara* (*Strobilanthes heynianus*), *Surasa* leaves (*Vitex trifolia*), *Pippali* (*Piper longum*), *Maricha* (*Piper nigrum*) are smoked and mixed together and made into a wick (*Varti*) and inserted into the anus to the extent of 12 *aṅgulas* causing urine to flow out (Rajan 2005). One must insert the wick while simultaneously applying clarified butter on the *pechaka* (part around the root of the tail). Sage *Pālakāpya* mentions some precautionary measures such in tying of the eyes during *Netrabasti* treatment, where it should not be too tight as it affects the medication. If the medicine is affected there are *doṣas* (fundamental bodily humours due to wind, phlegm and bile). As the eyes get unsteady or get squeezed, the medication causes wind to rise upwards and for faeces affected to pass out through the anus. If the medications poured are less than optimal, then the desired result obtained is also less. If it is afflicted, then death occurs. If medication intake is long and more, then only oils are given. Medications should also not be too strong or soft or cold.

[B] *Snehabasti* – Sage *Pālakāpya* states that oleaginous materials and oil can be administered as medications and is termed as *Snehabasti*. The *Uttarasthāna* (Chapter 4, *Snehavidhikathanam*)

describes these oils, giving the opinion of Sages *Garga and Bhāradvāja* (Sharma 1894). Administration of oleaginous materials and oils give good digestive fire and clear the joints, provide good skin color, remove *pitta* from the upper belly, removes fatigue, ticks and lice and pacify *dośas* of the body. Sage *Pālakāpya* states that medications are to be given if disorders arise in ears, eyes, tongue, face, teeth and head. Care should be taken so that oils that are administered are not hot and introduced in haste.

[C] *Āsthāpana Basti* – This therapy helps in maintaining the body *dhatu*s and *dośas*. The ‘*Hastyāyurveda*’ recommends it for aged elephants, and those suffering from thirst or rut flows. Decoctions made of herbs or oils are used as medications. For excitement of amorous desires, treating diseases related to swooning, worms in the belly or wearing of body *dhatu*s (fundamental principles that support the basic structure and functioning of the body such as lymph, blood, muscles, fat, bone, marrow and semen) this method can be used. Before administering it, the elephant must be tied well and then given the dosage based on its strength, disease, place and time. *Āsthāpana Basti* eases passage of faeces from the anus of the elephant. The medications are generally mixed with oils or milk and then administered.

[D] *Anuvāsana Basti* – The therapy, which helps the elephant digest food easily by stimulating its digestive fire by enemas through the rectal route is *Anuvāsana Basti*. It varies according to seasons and is generally given after meals. In the case of *Anuvāsana Basti*, the elephant is first subjected to massage of the pelvic and abdominal regions after food intake and made to sweat by light physical exercise. Oils are given along with soft warm salts as a moisturizer to moisten dry tissues, reduce digestive disorders - especially those arising from wind (*vāta*). Salts remove all poisonous wastes and give strength. If the bowel and bladder are empty after evacuation, it indicates that medication is retained without causing harm to the elephant. *Nasyakarma* or inhalation as a method of drug delivery is limited. However Sage *Pālakāpya* mentions *Nasyakarma* for elephants in several sections of his text, to treat

diseases of the head. Medications through the naso-oral tract (as in *Nasyakarma*) is detrimental along with *Anuvāsana Basti* (involving unctuous substances given after meals) as it makes the stimulated *dośas* to move in an upward direction causing other diseases related to vision and the head.

[E] *Kṣīrabasti* – Elephants can be administered milk as it is the best medication for treating blood disorders according to Sage *Pālakāpya*. For disorders of flesh, bone and fat, salt can be used, while for disorders of semen and marrow, water can be used as an additive. The text states that milk is added to a decoction of five roots (*Pañcamūla*), til seeds (*Sesamum indicum*), *Uśīra* (*Vetiveria zizanoides*), *Padmaka* (*Prunus cerasoides*), lotus, sandal, *Rāsna* (*Vanda roxburghii*), *Prapaunḍarika* (*Nelumbium speciosum*), *Mustaka* (*Cyperus rotundus*), *Mṛdvīka* (*Vitis vinifera*), *Māmsi* (*Nardostachys jatamansi*), *Mañjiṣṭha* (*Rubia cordifolia*), sugar and honey. *Kṣīrabasti* is also used to cure thirst, swooning, breathlessness and decreased flow of blood in arteries. It is generally practiced in case of elephants that are old, weak, whose rut flow has ceased or whose body *dhatu*s are worn out.

[F] Medications to remove *dośas* – The text gives a long list of herbal formulations used as enemas to treat afflictions of the *dośas*. The urine of elephants, ass and camels mixed with sour curd, liquor, grains, *Badara* (*Ziziphus jujuba*), moist black til seed oil (*Sesamum indicum*) made bitter with salt are to be given as medications to remove phlegm. To pacify *pitta* (bilious) disorders, a herbal decoction of ‘milk trees’, *Rodhra* (*Symplocos racemosa*), *Piṇḍīraka* (*Randia dumetorum*), *Kaseruka* (*Scirpus grossus*), *Abhīrupatrika* (*Asparagus dumosus*), *Śyāma* (*Ipomoea turpethum*), *Dhara* (*Emblia officinalis*), *Khadira* (*Acacia catechu*), *Turanti* (unidentified), *Agnimantha* (*Clerodendrum phlomoides*), *Nīpa* (*Barringtonia racemosa*), *Kaṭphalacetasa* (*Myrica esculenta*), *Shadi* (unidentified), *Suvarṇakṣīri* (*Argemone mexicana*), *Vajrajambu* (*Syzygium cumini*), *Dhātuki* (*Woodfordia fruticosa*), til seeds (*Sesamum indicum*), *Padmaka* (*Prunus cerasoides*), and *Uśīra* (*Vetiveria zizanoides*) are

given. They ease the faeces from the anus of an elephant. Warm medicated oils that are strong are good enemas for curing flatulence. The text also mentions certain enemas to be given to pacify the belly as well as treat blood disorders. Certain enemas are mentioned to cure diseases of genitals, painful passage of urine or urine entering into the belly.

[G] Rectal drug administration – Rectal administration is rare in veterinary medicine but considering the size of elephants it is a benefit as it can hold large quantities of drugs (Isaza & Hunter 2004). It requires acceptance of manual manipulation of the rectum and colon and cooperation of the elephant. Knowledge of administering the correct enemas through the rectum or anus is required so that they do not cause irritation in the colon or walls of the intestine. Further, such enemas are to be carefully deposited manually inside the anus so as to reach as far as the cranial and pelvic portions rather than being prematurely ejected from the rectum in the form of faeces. The procedure is initiated now-a-days by manually removing the large faecal balls (Mikota & Plumb 2003).

The '*Hastyāyurveda*' mentions that if the anus is affected, the *pitta* disorders are more in elephants and gives several formulations to ease faeces. The *Kṣudrarogasthāna* (Chapter 40, *Śonitāṇḍādhyāya*; Sharma 1894) describes inflammation of the scrotum in elephants and how it leads to urinary disorders. These also can be treated by enemas. The *Uttarasthāna* (Chapter 5, *Vastidānakathanam*) of the text mentions that one must follow *Uttara Basti* therapy for treatment of urinary diseases such as painful passage of urine, excess or scanty flow, urine entering the belly, and blood passing along with urine. Sage *Pālakāpya* recommends the use of tubular instruments (called *Puṣpanetra*) for injections into the vagina and urethra. These tubes have a length and circumference that is in accordance with the length and breadth of the passages into which they are to be inserted (generally penis of the elephant for *Uttara Basti* therapy).

Sage *Pālakāpya* quotes one instance of rectal drug administration that is very brief but interesting:

In some cases, pregnant elephants suffer from a condition of a dead foetus remaining within the uterus. The animal struggles due to labour and thus removal of the foetus by instruments without affecting the mother represents a severe problem. The *Śalyasthāna* (Chapter 33, *Mūdhagarbhāpanayanam*) deals with such a case of a dead foetus and its removal as follows (Sharma 1894) – “Using a decoction of clarified butter, *śāli* rice, *Dhanvana* (*Grevia tilifolia*) plant, one must worship the right portion of the trunk and also genital openings, slowly instilling confidence in the elephant. Then slowly injecting one’s hand into the womb of the elephant one must pull out the dead foetus. If it cannot be removed the normal way, one must use instruments, slowly excising obstructing parts and hurriedly one must stitch the parts to protect the mother and remove the foetus.” This shows that ancient Indians sought divine help for animals even during surgical procedures for them.

[H] Multipurpose enemas – The '*Hastyāyurveda*' elaborates on certain enemas to counter diseases that are caused by wrong administration of enemas that lead to aggravation of *doṣas*. In this context the text states that enemas must not be too strong, neither too hot nor cold and must be administered in the proper measures examining the *doṣas* of the elephant. *Śyāma* (*Ipomoea turpethum*), *Tṛvrit* (*Operculina turpetham*) and oil are to be given as medications to go deep and to be absorbed by the body. Therapy for the treatment of heart involves *Triphala* [a combination of *Āmalaki* (*Emblīca officinalis*), *Vibhītaki* (*Terminalia bellirica*), *Harītaki* (*Terminalia chebula*)], oils, *Śāli* (*Oryza sativa*) roots, *ChiraBilva* (*Holoptelea integrifolia*) and roots of *Śyāma* (*Ipomoea turpethum*), all made into a decoction. For swooning, cold enemas are to be given. These can also be given to excite amorous desires.

Post-enema administration observations

Some interesting details of the elephant’s bodily response to administered enemas are given in the '*Hastyāyurveda*' (Sharma 1894). This involves careful observations, examination and diagnosis. The *Kṣudrarogasthāna* (Chapter 43) of the text

devotes an entire chapter to treatment of old age in elephants and their daily regimen. Details of anointing the head with medicated oils, making the sleeping place soft by spreading *Darbha* (*Imperata cylindrica*) or other grasses are to be done post-enema administration in the case of aged elephants. Sage *Pālakāpya* states that the eyes treated with weak enemas or in excess, cause pain in the anus of elephants. Oleaginous materials and oils that are administered reach heart portions and affect the elephant if it has not eaten. These may also afflict the belly and wind may rise to the upper portions, eyes, ears, head and nose. If not eaten, oily *Anuvāsanas* are to be given. One must observe the elephant's behaviour for seven nights and then administer the oil for three days. By this the strength of the elephant increases. *Basti* therapy has to be also given based on examination of movements, load carrying capacities, suffering excess heat, cold, rain, fire or sounds.

The text states that leprosy, ulcers and urinary disorders are to be cured by *Anuvāsana Basti*. If swooning occurs or if it suffers from thirst, yellowish oils are to be given. Enemas that cause pain or which are poisonous are not to be given.

Conclusion

One finds a tremendous development of knowledge of administering medications as well as therapies to both humans and animals from remote periods. It is remarkable that ancient Indian veterinarians recognized such diseases and complications of animals and treated them, especially in large populations of elephants in armies and royal stables as well as those that were in the wild. Inter-disciplinary research into the various *Basti* therapies recommended by the text for treatment of various diseases as well as the diagnostic and surgical procedures for pregnant or war elephants would be a topic of research that would bring forth the excellent contributions of Sage *Pālakāpya*. The text is also useful for practically implementing *Basti* therapy for elephants in modern veterinary health care as post-enema observations are also given in the text. A study of these aspects may allow timely identification and treatment of elephant diseases.

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