Basti: Does the equipment and method of administration matter?

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ABSTRACT

Basti is one of the five procedures of *panchakarma* in Ayurveda. Classically, it is advocated in the diseases of *vata*. It is mainly of two types viz. *asthapana* and *anuvasana*. According to the classical texts *basti* administration is done with the help of animal bladder (*bastiputaka*) and specially prepared metal/wooden nozzle/catheter (*bastinetra*), the whole assembly is called as *bastiyantra*. Nowadays, except in some of the *Vaidya* traditions in Kerala, *basti* administration is often done using enema-can or douche-set. In the aforesaid classical procedure active pressure is expected to be given on the *bastiputaka* whereas, in conventionally used enema-can only passive or gravitational force plays a role. This is important in the context of '*basti danakala* or *pidanakala* i.e. time for *basti* administration'.

Key words: *Basti*, *basti pidanakala*, *bastiputaka*, colon, enema-can

INTRODUCTION

Basti, the prime treatment in *shodhana* is considered as one of the most important treatments for many diseases according to Ayurvedic classical literature. It is the best treatment modality for all types of *vata* diseases. The type of *basti* where decoction is the major part is called as *asthapana basti* or *niruha basti* and the *basti* in, which major part is oil or other *sneha* (oleaginous substance) is called as *anuvasana*.[1] The desired effect of *basti* depends on several determinants and *basti-danakala* is one of the important determinant variables. In this study, we have addressed this *basti-danakala* determinant with the help of barium contrast to assess the difference in administration time and reach of *bastidravya* in the colon with two different methods of - (1) *bastinetra* with *bastiputaka* method (classically used) and (2) enema-can method (commonly used).

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MATERIALS AND METHODS

Two apparently healthy male adult individuals (Subject-A and B) who had *matra basti* on previous day and with prior *sneha-sveda* in the morning were administered *niruha basti* comprising of *Makshika* (honey) 150 ml, *Saindhava* (rock salt) 15 g, *Tila taila* 150 ml, *kalka* (paste of fresh herbs or dried powders) 30 g, added to *Erandamula kvatha* (decoction of castor roots in water) to make total 960 ml with classical method and with conventional enema-can method respectively, after taking written informed consent.

Barium sulphate B.P (Microbar HD) 25 g were added in both the *niruha bastidravya* after its preparation. In subject-A, the *Vaidya* administered *basti* with uniform pressure and gradual squeezing of the *bastiputaka*. In the subject-B the enema-can was kept hanging on a stand four feet above the bed. *Basti* administration was done on the X-ray table and radiographs were taken immediately after the administration.

OBSERVATIONS

The *basti* administration time in the subject-A was about 60 s where stipulated amount of *bastidravya* entered in the colon homogenously with uniform positive pressure. The

radiograph of subject-A [Figure 1] shows complete filling of sigmoid colon and further propelling of the *bastidravya* through colon towards Ileo-caecal (IC) junction where it has almost filled the ascending colon.

In subject-B it took about 10 min for administration of *bastidravya* with interruption. The radiograph of subject-B [Figure 1] shows added filling of sigmoid colon, propelling the *bastidravya* through colon, reaching the IC junction but the amount of *bastidravya* is less at that point in comparison to subject-A.

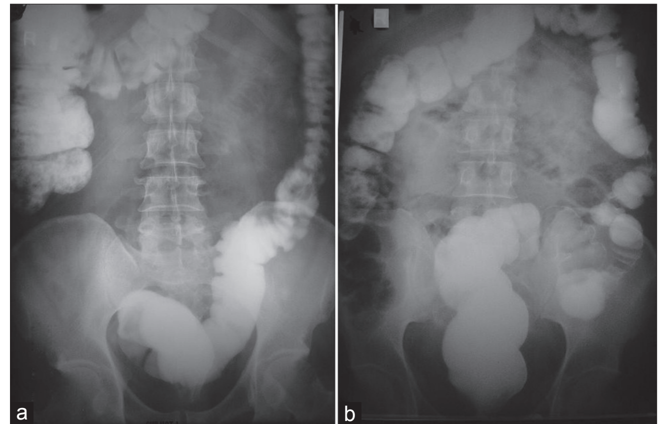

Figure 1: Radiographs of subject a and b

DISCUSSION

The term *basti/vasti* comes from usage of animal urinary bladder for administration of the *bastidravya*.[2] In the absence of bladder artificial *bastiputaka* prepared by thin skin of aquatic bird/goat or a wax coated cotton bag may be used.[3] The purpose of using bladder is "uniform contractility with uniform flow." The minimum positive pressure on bladder filled with *bastidravya* will contract uniformly and pour out with uniform flow within a short-time.

Niruha basti has uniqueness in the preparation of *bastiyantra, bastidravya* and its administration. "*Bastidravya*" is prepared by adding ingredients like *makshika*, *lavana*, *sneha*, *kalka* and *kvatha* together in a sequence,[4] which forms a homogenous oil in water (O/W) emulsion.[5]

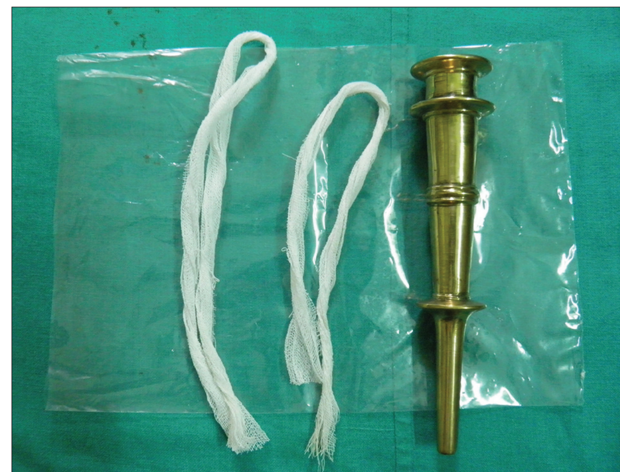

Figure 2: *Bastinetra* having three *karnika*

Usage of animal bladder for preparation of *bastiputaka* was possible and justified in earlier days, however, is not feasible and practical today. As an alternative, a plastic bag of 50 microns thickness and having 1.5 l capacity is used as *bastiputaka,* and is disposed of after single use.[6] It is filled with *bastidravya,* and tied with metal *bastinetra* to form *bastiyantra* [Figure 2]. *Bastinetra* is a tubular structure usually made up of brass, having tapering end and wider base, which resembles cow's tail. It has three rings on external surface called as *karnika* (ridges), the last two at the bottom are used to tie the *bastiputaka* with *netra*.[7]

Figure 3: Enema-can set with lock and catheter

Commonly, at many places, *basti* is administered using enema-can/douche-set instead of classical *bastiyantra* due to its easy availability and handling. This set consists of plastic/metal can and attached plastic tube with nozzle having lock (to which sometimes the simple rubber catheter is attached) [Figure 3]. The enema-can is held to the stand approximately four feet above the patient. Here, only gravitational force plays the role through passive pressure.[8] In this method, at times *kalka* material blocks the tube causing stagnation of flow of *bastidravya* and delay in administration. This delay causes separation of homogenous emulsion of *bastidravya* in the enema-can into unctuous/oil, aqueous/decoction and *kalka* component. Sometimes, *kalka* does not enter in the colon at all. The delay in administering the *bastidravya* in colon is a *bastidosha* called *ativilambita,* which is not desirable.

According to, the classical text of Ayurveda *basti-pidanakala/basti-danakala* for *niruha basti* is 30 *matra*. There are different

traditional methods of measuring a *matra*. In the context of *basti-danakala*, *Sharangadhara* describes one *shotika* as one *matra*.[9] A *matra* is also one "single eye closure." In general, the calculation of thirty *matra* according to, Ayurvedic Formulary of India Part-I, comes around 46 s.[10] However, in the context of *niruha basti* Nampoothiri *et al.* have estimated *basti-danakala* to 60 s.[11] In the subject-A stipulated quantity of *bastidravya* as a homogenous emulsion entered into the colon within 60 s, which required positive pressure by the *Vaidya*/Administrator [Figure 4]. In the subject-B the procedure took nearly 10 min, which was devoid of positive pressure. The homogenous emulsion in subject-B entered in colon in three phases namely water (decoction), oil, and *kalka* component in that order. It serves only for filling the colon with *bastidravya,* which probably would not help to attain desired effect of *basti.* The retention time of the *basti* for subject-A was 5 min and for subject-B it was 15 min, although, both had *madhyama-koshtha*.

The classical texts of Ayurveda have given liberty to the *Vaidya* to think and modify the instruments, line of treatment and modality wherever required, without losing its core principles.[12] Here, in the subject-A, *niruha basti* is administered with the classical method but the *bastiyantra* is modified wherein disposable plastic bag is used instead of the animal bladder/leather bag. When the homogenous emulsion of *bastidravya* enters the colon with "uniform positive pressure" within short-time, it reaches up to proximal colon, i.e. nearer to caecum and probably exerts procedure effect.[13]

Human colon is supposed to be sluggish in absorption and motility. It is involved in various functions, including absorption of water and electrolytes, transport of intraluminal contents, and production of short-chain fatty acids (SCFA). SCFAs (butyrate, propionate, and acetate), which have an integral position in colonic health are principally synthesized in more acidic environment of the proximal colon. The salvage of water and electrolyte is primarily accorded to the proximal colon although, distal colon and rectum contribute to this task but to a lesser extent.[14] Butyrate promotes the absorption of water, sodium, and chloride from the proximal colon.[15] The ICC_{SM} (Interstitial Cells of Cajal in sub-mucosal surface of the circular muscle), the primary pacemaker cells are solely present in proximal portion of colon.[16] Loss of ICC in animals due to infection, surgical treatment and treated with chemicals correlated with loss of pacemaker activity, propagation defects, reduced neurotransmission, and loss of response to stretch.[17] The parasympathetic supply to the proximal colon i.e., the intestinal branches originate from the posterior division of the vagus nerve, which are secretomotor to glands and motor to muscular coats of gut.[18] Thus proximal colon has significant role in colonic motility and absorption.

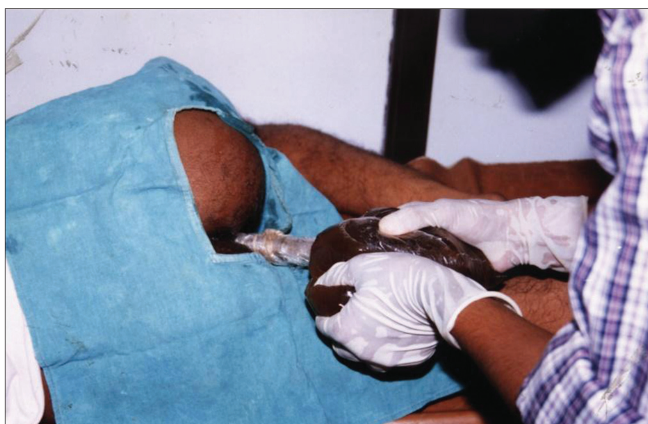

Figure 4: *Basti* administration with *bastinetra* and *putaka* method

We assume that due to uniform positive pressure homogenous emulsion of *bastidravya* reaches quickly to proximal colon where it probably stimulates ICC_{SM}, which in turn initiates colonic propagating activity and chain of reactions like churning of contents in proximal colon and production of SCFA, absorption of electrolytes, water and other active principles through carrier mediated transport mechanism. Other factors like luminal distention and chemical stimuli by *niruha-bastidravya* contribute to this process. This can happen with the classical method and not by the adopted conventional method in which the tube and can cannot give sufficient pressure for *bastidravya* to reach proximal colon as a homogenous emulsion.

The reach of the *bastidravya* and its retention time in colon may differ due to the factors such as *vaya* (age)*, prakruti* (bodily constitution), *bala* (strength), *satva* (psyche)*, agni* (digestive capacity)*, koshtha* (inherent condition of the digestive system), *desha* (region)*, satmya* (compatibility) of the subject to *basti* procedure and *bastidravya*, *kala* (season/time of administration of *basti, i.e.,* morning or evening, particular day during the course of *yoga*/*karma*/*kala basti*), total quantity of the *bastidravya*, ratio of ingredients used in the *basti* (*makshika, saindhava, sneha, kalka, kvatha*), herbs used for decoction and *kalka*, besides skill and positive pressure used by the administrator.

CONCLUSION

Niruha basti is an active *panchakarma* procedure, which has to be performed by a skilled *Vaidya* with an optimum uniform positive pressure, while maintaining stipulated time of *basti-danakala* so as to reach the *bastidravya* as homogenous emulsion up to the proximal colon. It would be interesting further to study, the impact of *niruha basti* by

the classical method on proximal colon in terms of colonic motility, its central nervous influences, SCFA production, transportation of gut contents, and absorption of water and electrolytes. The message is loud and clear that while adapting to novel methods of technology we need to have the fidelity to classical principles and practices of Ayurveda.[19]

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