ISSN: 2322 - 0902 (P)
ISSN: 2322 - 0910 (O)

International Journal of Ayurveda and Pharma Research

Review Article

ROLE OF *NASYA* IN THE MANAGEMENT OF DYSFUNCTIONAL UTERINE BLEEDING - A REVIEW

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ABSTRACT

Regular menstrual cycles with adequate quantity and duration of bleeding indicate good reproductive health, with variations in these being reflected as menorohagia, oligomenorrbea, dysmenorrbea, PCOD, infertility etc. Dysfunctional uterine bleeding is particularly common during adolescence and perimenopausal periods. It has been defined as a state of excessive uterine bleeding without clinically detectable organic, systemic and iatrogenic causes. DUB is caused by the abnormal functioning of hypothalamo – pituitary – ovarian axis.

Nasya is a term applied generally when the medicine is administered through the nasal passage. It is considered as the most specific *Panchakarama* therapy used for the diseases of *Siras* (head) or *Urdva jatru* region, as nasal passage is regarded as the gateway to the head. In the present article the possible role of *Nasya* in the management of dysfunctional uterine bleeding is discussed. *Nasya* indirectly work on the entire body by improving the functioning of central nervous system and endocrine glands. The neurons which stimulate production of GnRH, originates from the olfactory area and GnRH is the regulator of gonadotropin hormones. The hormones of menstruation are under the control of these secreted by the pituitary. *Nasya* which is considered as having direct action on neuro-endocrinological system may regulate HPO axis and normalize the menstruation.

KEYWORDS: Dysfunctional uterine bleeding, DUB, *Nasya karma*, Nasal instillation.

INTRODUCTION

Dysfunctional uterine bleeding is heavy and or irregular bleeding in the absence of organic diseases. This excludes pelvic pathology, pregnancy, medical problems and bleeding disorders[1]. DUB has close resemblance with *Rakta pradara (Sar.Sa)/ Rakta yoni (AS.Sar) / Pradara (CA. Chi) / Asrigdasa (Cha.Chi, Su.Sar, Ah.Ut)* which are explained as *Pradeerana* of *Raja*[2] i.e., excessive menstrual bleeding. The prevalence of DUB is reportedly 20% worldwide[3]. In Ayurveda, for the treatment of a disease, generally two types of therapy may be utilized, *Shodhana* and *Shamana*. These therapies are used for the conservation of health and eradication of diseases. While *Shodhana* aims to purge toxic metabolites from the body *Shamana* is targeted at alleviating the functional factors that causes diseases. Among *Shodhana, Nasyakarma* is considered as an important therapy. All drugs and measures that are administered through the nasal passage is *Nasya.* The nasal administration of drugs offers dominance over other routes of administration. Drugs are often rapidly absorbed through the nasal mucosa, leading to rapid onset of action. It also bypasses degradation in the gastro intestinal tract and first pass metabolism in the liver[4]. The olfactory receptor cells are in direct contact with both the central nervous system and the environment. The olfactory pathways escape the blood brain barrier which prevents many systematically administered drugs from entering the brain. The nose-brain pathway as a channel for transmission of agents into CNS is an area of ongoing research. In recent studies nerve growth factor (Frey II et al.1997), Local anaesthetics (Chou and Donovan, 1998), Inorganic mercury (Henriksson and Tjalve 1998), Taurine (Brittebo and Erikson, 1995), Dihydro ergotamine (wang et al: 1998), carboxylic acids (Eriksson et al, 1999) and 2,3 – didehydro - 3'-deoxythymidine (yajima et al., 1998) have been transported into CNS through the nasal route.

Pathophysiology of DUB[5]

DUB is mainly caused by aberrations in the hypothalamo-pituitary-ovarian axis. It is of two types– anovulatory and ovulatory type. 80 – 90 % of DUB is anovular type, where bleeding pattern is irregular. In this menorrhagia metrorrhagia and amenorrhea are common. It is due to immature HPO axis and insensitive ovarian follicles. Endocrinopathies, usage of certain drugs like sex

steroids or hypothalamic depressants also cause anovular DUB.

Ovulatory DUB is seen in remaining 10-20%, in this type the menstrual cycle is regular and menorrhagia is thought to occur from defects in bleeding control mechanism of menstruation.

Hormonal imbalances may cause DUB as in

- Estrogen Breakthrough bleeding
- Estrogen withdrawal bleeding
- Progesterone breakthrough bleeding

Estrogen Breakthrough Bleeding[6]

As there is no ovulation, corpus luteal formation is impaired and there is absence of progesterone production. Under the influence of unopposed estrogen, endometrium continues to proliferate. Endometrium sheds in an irregular manner and results in prolonged and heavy bleeding

Estrogen Withdrawal Bleeding[7]

This type of abnormal bleeding usually occurs in women approaching the end of reproductive life. Due to disturbances in the rhythmic secretion of gonadotropins, there is slow increase in estrogen secretion; also there is no negative feedback inhibition of FSH. Eventually there is gradual rise in the level of estrogen with concomitant phase of amenorrhea for about 6- 8 weeks. Due to anovulation and absence of growth limiting progesterone, throughout the cycle, the endometrium is under the influence of estrogen. Because of insufficient structural stromal support the endometrium remains fragile. Following negative feedback action of FSH, the estrogen withdraws and endometrial shedding occurs for a longer period.

Progesterone Breakthrough Bleeding[6]

This occurs in the presence of an unfavorably high progestin to estrogen ratio. If the endometrium initially primed with endogenous or exogenous estrogen is exposed to progestin and then withdrawn from progestin results in heavy bleeding, usually seen in cyclic hormonal replacement therapy.

Ovulatory DUB[1, 8, 9]

Heavy menstrual bleeding is primarily at the level of endometrium for women having regular ovulatory cycles without any structural uterine abnormalities. Vaso constriction brought about by PGs in the endometrium is one of the important mechanisms for the control of bleeding. An alteration in the ratio of PGE_2 and $PGF_{2\alpha}$ occurs in some women despite ovulation and normal progesterone production. Increase in PGE receptors in the endometrium, increase in fibrinolytic activity and decrease in thromboxane production result in heavy menstrual bleeding. Ovulatory DUB is usually presented as polymenorrhea and polymenorrhagi. Ovary goes through normal cycle, but does so quickly. This affects the follicular phase rather than the luteal phase. Endometrium goes through usual phases, but proliferation increases and menses takes place every 2 – 3 weeks. Heavy or prolonged cyclical bleeding may also be the result of corpus luteal defects and is presented in the following ways.

Irregular Shedding of Endometrium

Usually endometrial regeneration is completed by the end of third day of periods. In this condition, desquamation is occurring for a long period along with failure of endometrial regeneration. Irregular shedding occurs when corpus luteum persists, where by the progesterogenic support continues beyond 14 days abnormally.

Possible descriptions are;

i) Incomplete withdrawal of LH even on 26th day of menstrual cycle
   - Incomplete atrophy of corpus luteum
   - Presistent secretion of progesterone
ii) Persistent LH
   - Inhibition of FSH
   - Suppresses ripening of the follicle in the next cycle
   - Less estrogen
   - Less regeneration

Irregular Ripening of Endometrium

Due to poor formation and inadequate function of the corpus luteum, production of both estrogen and progesterone is insufficient to support the endometrial growth i.e., there is inadequate stabilization of the endometrium, which sloughs irregularly. So before the onset of proper flow, slight bleeding starts and continues. Endometrial study preceding or immediately after spotting shows patchy areas of secretory changes amidst the proliferative endometrium.

Ayurvedic Approach

Various clinical conditions of abnormal uterine bleeding can be considered as *Asrigdara*. In Ayurvedic classics it is explained as excessive *Deerana* of *Asrk* through *Yoni marga* i.e., excessive bleeding per vaginum. Associated symptoms like general debility, body pain, anemia etc. are also present. Detailed description about *Asrigdara* is available in all the Ayurvedic classics. Based on various treatment principles described in classics it can be summarized as;

1. *Nidana parivarjana*
2. *Rakta sthapana* or *Rakta sangrahana*
3. *Dosha shamana*
4. *Dosha shodhana*
5. Use of *agni deepana* drugs

Mode of Action of *Nasya* [10]

According to almost all classical references, *Nasa* (nose) is the gateway to *Shiras* (head). So the drug administered through the nose supposedly reaches the brain and eliminates the morbid *Doshas* responsible for various diseases. In *Ashtanga Sangraha*, it is clearly mentioned that drug administered through nose reaches *Shrinkataka*, which is a *Sira marma* that spreads in the *Shiras* which is said to be the junction of routes from *Netra, Stotra, Kanta* and *Nasa*. The drug reaching *Shringataka* dislodges the morbid *Doshas* from head or *Jatrurdva* region. The irritating effect of administered drugs increases blood circulation of brain and the accumulated morbid *Doshas* are expelled out. The drug administered enters into the systemic circulation by diffusion and also direct pooling into the intracranial region by vascular path. Diffusion - lipid soluble substances have greater affinity for passive absorption through the cell walls of nasal mucosa and pass the blood brain barrier. Vascular path-vascular path transportation is feasible through the pooling of nasal blood into the vena fascialis. This can be accelerated by *Purvakarma.* It freely communicates with intracranial circulation. Such a pooling of blood from nasal veins to venous sinuses of the brain will occur more in lowered head position due to gravity.

Effect on Neurovascular Junction

The efferent vasodilator nerves are opened up on the superficial surface of the face. They receive stimulation by fomentation and massage and this can increase the blood flow to the brain. It is also possible that a fall in arterial pressure due to vasodilatation may induce increase in intracranial pressure, which probably forces more transfusion of fluids in brain tissue which may lead to make the probable action of drug into brain.

Effect on Neuroendocrine Level

The peripheral olfactory nerves are chemoreceptor in nature. The olfactory nerve is phylogenetically closely related to brain, however it is known that these nerves are connected with limbic system of the brain including hypothalamus. This limbic system and hypothalamus are having control over endocrine secretions. It is considered that the stimulation of the olfactory nerves causes stimulation in certain cells of hypothalamus and amygdaloid complex. There are adjacent nerves called terminal nerves which line the olfactory nerves. They are connected with the limbic system of the brain. Limbic system is related with the behavioral aspect of human beings and also has control over endocrine secretions.

DISCUSSION [8,10]

There has been much interest in the nasal route for delivery of drugs to the brain via the olfactory region in order to avoid the blood brain barrier (BBB). Nose is connected pharmaco dynamically through vascular system nerve plexus of olfactory nerve and branches of trigeminal nerve to brain. The olfactory nerves are connected with the higher centers of brain. Limbic system which consists of amygdaloidal complex, hypothalamus, epithalamus, anterior thalamic nucleus, parts of basal ganglia etc. The drugs administered nasally stimulate these areas which show action on regulation of endocrine and nervous system functions. Since the most important communication is to hypothalamus through the fibers from olfactory bulb, in *Stree roga* the *Nasya karma* is beneficial in HPO axis related conditions. From recent studies (T.C. Anand kumar et.al., 1991) it is clear that nasal administration does tremendous effect in stimulating GnRH factor. Once the GnRH is secreted in a pulsatile manner the ovulation and menstruation can be normalized in the absence of other organic pathologies. Hence *Nasya karma* may offer the best remedy in the management of DUB. It is said that, "*Nasa hi shiraso dwaaram*"[11], so *Nasya* would be the acceptable *Shodhana* procedure to manage endocrine disorders where hypothalamus or pituitary is involved. From recent studies and classical references, the role of *Nasya* in the management of DUB can be inferred. Formulations like *Satapushpa tailam* and *Chandanadi tailam* which are advised in the context of *Asrigdaram* are also indicated for *Nasya*. Phytoestrogenic property of different components of these formulations may also regulate the activity of gonadotropin secretion and thus regulate menstruation.

CONCLUSION

In the light of recent scientific studies, it may conclude that *Nasya* may have an important role in regulating the functions of hypothalamus and thus controlling different endocrinal functions. So itself *Nasya* may be an effective choice in the management of DUB.

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Cite this article as:
Aparna S, Maya Balakrishnan, Giby Thomas. Role of Nasya in the Management of Dysfunctional Uterine Bleeding - A Review. International Journal of Ayurveda and Pharma Research. 2021;9(2):68-71.
Source of support: Nil, Conflict of interest: None Declared

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