

Functional Hypothalamic Amenorrhea in Women

by Jennifer Vitello

Functional hypothalamic amenorrhea (FHA), a form of amenorrhea and chronic anovulation, is one of the most common types of secondary amenorrhea. Whereas primary amenorrhea is an endocrine disorder usually associated with a pathology in the hypothalamus-pituitary-ovary axis, secondary amenorrhea may stem from functional causes such as nutritional deficiencies, excessive exercise or stress. It can be difficult to diagnose and to cure. Western treatments usually consist of a blend of therapies—nutritional, hormonal (which may or may not be effective) and psychological. However, none address the root cause. Ayurvedic chikitsa considers both the samprapti and the overall lifestyle of the patient and works with the individual to heal from the inside out.

A Healthy Woman's Reproductive Cycle

The menstrual cycle is the monthly series of changes a woman's body goes through in preparation for the possibility of pregnancy. It begins at puberty, ranging from the ages of 10 to 16, and ends at menopause at an average age of 51.¹

The ovaries are the main reproductive organs of the female body. Each ovary contains a collection of follicles or immature eggs. Each month, the ovaries alternate releasing a mature egg— a process called ovulation. Over the course of a woman's life, approximately 400-450 eggs will mature and ovulate while the rest will degenerate via atresia.

The egg travels through the fallopian tube to reach the uterus. The uterus receives the fertilized or unfertilized egg from the fallopian tubes. Each month, the tissue lining the uterus grows in preparation of pregnancy. If the egg is fertilized, it will try to implant itself into the endometrium. If fertilization doesn't occur, the lining of the uterus sheds through the vagina. This is a menstrual period. The vagina is a tubal tract made of muscle and lined with a mucous membrane. It connects the uterus to the outside of the body. It provides lubrication to allow for easier intercourse and provides a pathway for menstrual fluids to exit the body.²

The menstrual cycle, which is counted from the first day of one period to the first day of the next, isn't the same for every woman. Menstrual flow might occur every 21 to 35 days and last two to seven days. For the first few years after menstruation begins, long cycles are common. However, menstrual cycles tend to shorten and become more regular as women age.³

Hormones are responsible for the regulation of a menstrual cycle. The flow of hormones that affect the female reproductive system begin in the hypothalamus, flow to the pituitary gland and then to the ovaries. Beginning at puberty, gonadotropin-releasing hormone (GnRH) or luteinizing hormone-releasing hormone (LHRH) is secreted by the hypothalamus to the pituitary gland. LHRH stimulates the pituitary gland to release luteinizing hormone (LH) and follicle-stimulating hormone (FSH). These hormones act on the ovaries. LH affects the development of the follicle, stimulating it to grow and mature and release when it's ready. FSH works with the LH to stimulate the growth and development of the follicle.

As the follicle matures, it releases estrogen and progesterone. Estrogen is responsible for the maturity of the female sexual organs and breast development. Estrogen levels fluctuate throughout the menstrual cycle. Progesterone is secreted in response to FSH and LH. It's responsible for the thickening

of the endometrium of the uterus during the second half of a woman's monthly cycle. It also prevents uterine contractions inhibiting menstruation.

The menstrual cycle is broken down into two phases: the follicular phase and the luteal phase. During the follicular phase, FSH and LH are increasing, and estrogen starts being produced as the follicle matures. All three hormones peak together on day 12 to ensure ovulation takes place. During the luteal phase, the corpus luteum is formed in the ovary from the remains of the follicle. It secretes large amounts of progesterone, which stimulates the growth of the uterine endometrium. During this time, a small amount of estrogen is produced. Both estrogen and progesterone peak from days 23-25 and reach a low point on day 28. The drop-off in progesterone is what triggers menstruation.⁴

Western Pathology of Functional Hypothalamic Amenorrhea

Secondary amenorrhea, which is defined as 3 months absence of menstruation, occurs in approximately 3–5% of adult women. Functional hypothalamic amenorrhea is a condition characterized by the absence of menses due to the suppression of the hypothalamus-pituitary-ovary axis, in which no anatomical or organic disease is identified. Three main types of FHA have been recognized as stress, weight loss or exercise. These distinctions acknowledge that women who are either underweight or of normal weight

may be affected, but in many cases, all three factors are present. Regardless of the trigger, functional hypothalamic amenorrhea is characterized by the suppression of GnRH pulsatility. See Figure 1.⁵

The spectrum of hypothalamic-pituitary disturbances in FHA may be very broad and includes a lower mean frequency of LH pulses, the complete absence of LH pulsatility, as well as a normal-appearing secretion pattern and higher mean frequency of LH pulses. In turn, decreased gonadotropin secretion leads to reduced estradiol production in the ovary. Regardless of the specific trigger, a complex state of hypoestrogenism, other endocrinological aberrations and metabolic abnormalities due to FHA may impact the whole-body homeostasis.⁶

Impairment of GnRH and gonadotropin secretion as a sequel

is the key pathology in this trait; and also other pituitary hormone secretion is abnormal in FHA. Functional hypothalamic amenorrhea should be, in each case, differentiated from other forms of

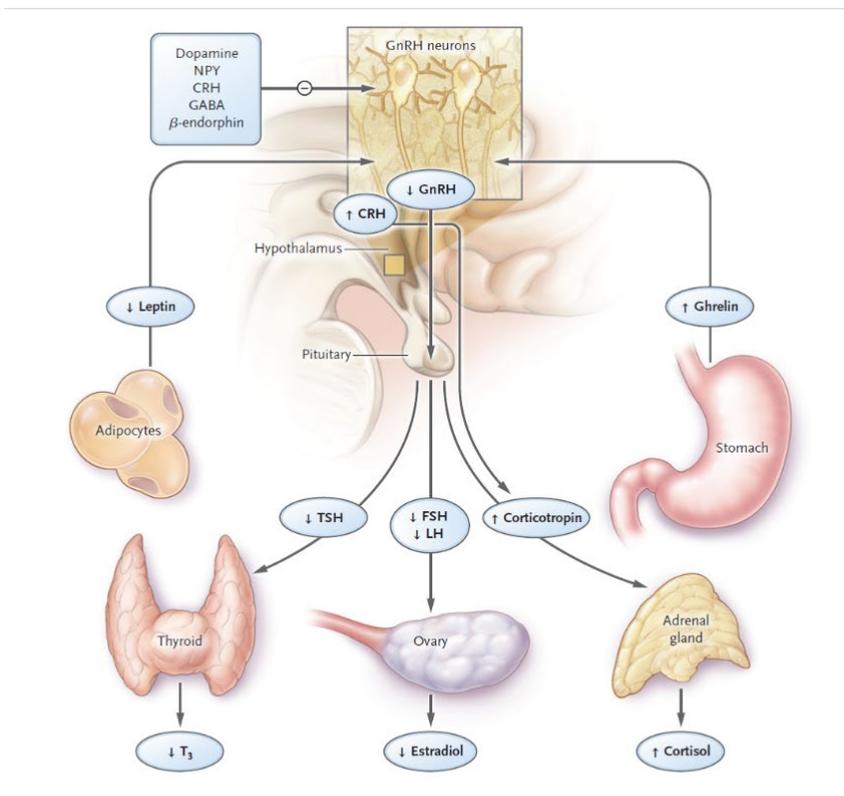


Figure 1. Hormonal and Other Changes in Patients with Hypothalamic Amenorrhea.

In patients with hypothalamic amenorrhea, there are alterations of hormones and other factors that affect the secretion of gonadotropin-releasing hormone (GnRH), including low levels of leptin and high levels of both ghrelin and neuropeptide Y (NPY). β -endorphin, corticotropin-releasing hormone (CRH), dopamine, and γ -aminobutyric acid (GABA) are factors that negatively influence GnRH secretion. Some of these factors may also serve as hunger signals from the peripheral to the central nervous system and as links between nutrition and reproduction. Hallmark findings in adolescents and young women with hypothalamic amenorrhea include overactivity of the hypothalamic-pituitary-adrenal axis, suppression of the hypothalamic-pituitary-ovarian axis, and alterations in thyroid hormone regulation. FSH denotes follicle-stimulating hormone, LH luteinizing hormone, TSH thyrotropin, and T_3 triiodothyronine.

primary or secondary amenorrhea. The basic approach to this distinction is an assessment of the gonadotropins and identifying hypogonadotropic hypogonadism. If such a diagnosis has been made, the key diagnostic tool is a GnRH stimulation test, which in the case of FHA, shows a positive response of the gonadotropins to exogenous GnRH. This test easily distinguishes hypothalamic dysfunction from pituitary diseases, where hypogonadism is also characteristic. Once the hypothalamic origin has been found, it is important to rule out genetic and organic diseases.⁷

Symptoms and Diagnostic Tests

According to the American Society of Reproductive Medicine, FHA is responsible for 20–35% of secondary amenorrhea cases and approximately 3% of FHA cases of primary amenorrhea. The incidences are higher in women athletes.

Women with FHA present with amenorrhea of six months' duration or longer. Women's health in this disorder is disturbed in several aspects including their skeletal system, cardiovascular system and mental problems. Patients manifest a decrease of bone mass density, which is related to an increase of fracture risk. Therefore, osteopenia and osteoporosis are the main long-term complications of FHA. Cardiovascular complications include endothelial dysfunction and abnormal changes in the lipid profile. FHA patients present significantly higher depression, anxiety and also sexual problems compared to healthy subjects.⁸

Hypothalamic amenorrhea is ultimately a diagnosis of exclusion. Patients should be asked about their exercise and dietary habits, including any history of bingeing and purging and recent stressors. Women should also be queried about use of medications that may affect menses, in particular, antipsychotic and contraceptive agents.⁹

Patients with hypothalamic amenorrhea characteristically have a low level of serum estradiol and low or low-to-normal levels of luteinizing hormone and follicle-stimulating hormone, whereas the gonadotropin response to GnRH stimulation is preserved. In a patient with presumed hypothalamic amenorrhea, the measurement of follicle-stimulating hormone alone generally provides adequate information to rule out ovarian insufficiency.¹⁰

Western Treatment

Clinical experience suggests that a multidisciplinary approach — including the active involvement of a primary care physician (internist, pediatrician or specialist in health issues of adolescents and young adults), nutritionist and psychotherapist — can be helpful, although data regarding the long-term efficacy of this approach are lacking.¹¹

Addressing possible triggers such as weight loss, disordered eating or excessive exercise is a primary focus in the management of FHA. There has been debate over whether a critical increase in BMI is required to resume menses. A common recommendation in the literature is that a 1-2 kg weight gain from current weight, or a 5% increase in body weight, can result in the resumption of menses and improve BMD in patients with FHA.

Specifically, in amenorrhoeic female athletes, a multidisciplinary approach, which includes nutritional therapy, psychological therapy and modification of exercise regimen has been recommended. In all

patients with FHA, if lifestyle modification is the primary treatment modality, a follow-up should be done every two to three months to determine whether the desired effect is being achieved.

Though studies looking at psychological therapy in FHA have been small, the effects of therapy are promising and are unlikely to result in harm. Therefore, psychological therapy may be considered as part of the multidisciplinary treatment of patients with FHA.

The main role of pharmacological therapy in FHA is to promote bone health and prevent the development of osteoporosis. A lack of estrogen during premenopausal years has been linked to decreased BMD. Currently, the Endocrine Society has recommended against using combined oral contraceptives (COCs) for the sole purpose of improving BMD, due to conflicting evidence. Instead, a trial of short-term transdermal estrogen with a cyclic oral progestin is recommended in amenorrhoeic adolescents who have not been successful with lifestyle modification, and who are not in need of COCs for contraception.¹²

Ayurvedic Interpretation of Vata's Effect on Menstruation

The menstrual cycle of a woman is called rajodharshana, which translates to "seeing of the blood." It's also called rutukala, which means "a woman's season." Vaginal disorders are referred to as yoni vyapaad. Bandhya yoni vyapaad is the absence of menstrual flow or amenorrhea. It is also classically called nashta-rakta and is caused by the depletion of the rasa and shukra dhatu.¹³

Characteristics of Healthy Menstruation

Caraka Samhita states the following as healthy menstruation: "The menstruation which appears every month, which is free from sliminess of discharge, burning sensation and pain, which continues for five nights and which is neither excessive nor scanty is to be considered as normal. The menstrual discharge which is of the colour of gunja fruits or of lotus or of lac or of indra-gopa should be considered as unpolluted."¹⁴

The Introduction of Vata Dosha Upon Yoni Vyapaad

Vata dosha is the primary dosha considered most at fault in conditions of the vagina. According to the Caraka Samhita, "Vayu is the elan vitae, vayu is the strength, vayu is the sustainer of the body of living beings, vayu is all-pervasive, and vayu is reputed as the controller of everything in the universe. If in a person, vayu moves unimpaired, it is located in its own site, and it is in its natural state, then he lives for more than hundred years free from any disease. These five types of vayu, located in their respective abodes in normal state, perform their functions properly in order to sustain the physique in a healthy state. When these five types of vayu get located in a place which is different from their own and when impaired, they afflict the body with diseases specific to their locations and functions. This may also lead to instantaneous death."¹⁵

Some of the ailments caused by vayu include "the intake of ununctuous, cold, scanty and light food; keeping fast in excess; swimming in excess; resorting to wayfaring, exercise and other physical activities in excess; loss of dhatus; excessive emaciation because of worry, grief and affliction by diseases; anger, sleep during day time, fear and suppression of natural urges; formation of ama."¹⁶ These lifestyle imbalances can cause such symptoms as "contraction, stiffness of joints and pain in the bones as well as joints; destruction of foetus, semen and menses."¹⁷

Apana vayu is responsible for the release of monthly menstrual blood. The Caraka Samhita states, "Apana vayu is located in the two testicles, urinary bladder, phallus, umbilicus, thighs, groins, anus and colon. Its functions are the ejaculation of semen, voiding of urine and stool, elimination of menstrual blood and parturition of foetus."¹⁸ When a mature egg is released, that's the function of vyana vayu. The uterus receives the fertilized or unfertilized egg from the fallopian tubes, which is a function of samana vayu. If fertilization doesn't occur, the woman menstruates, which is a function of apana vayu. The vagina provides lubrication along with a pathway for menstrual fluids to exit the body.

Functional Hypothalamic Amenorrhea Nidana and Samprapti

*"O Lord! Among human beings, women are the excellent reason de etre of progeny. It is the diseases of her genital organs which cause impediments in this regard. Therefore, I want you to explain me the origin, signs as well as symptoms and treatment of these disorders for the welfare of humanity."*¹⁹

Vata-type FHA is caused by vata-provoking lifestyle regimens that lead to depletion. Cold, dry and light foods leading to malnourishment are important contributing factors as are excessive motion like a fast-paced lifestyle filled with travel, stress and overwhelm. Excessive exercise also provokes vata. According to the Ashtanga Hridayam, the following are consequences of too much exercise: thirst, emaciation, breathlessness due to exhaustion, rakta pitta diseases, tiredness and fatigue, cough, inflammation (fever) and vomiting.²⁰ Symptoms of FHA include lack of menstruation along with general vata imbalances like dryness, constipation, dry skin and hair, weight loss, worry and anxiety.

Vata/pitta types of functional hypothalamic amenorrhea occurs in individuals who become so focused on achieving goals that they forget to take care of themselves by eating regularly and getting plenty of rest. It can also be brought on by competitive sports and extreme workouts driven by a desire to be the best. This form of pitta dosha vitiation can also lead to extreme depletion of the rasa and shukra dhatu. According to Caraka Samhita, "If pitta located in the vaginal tract and uterus vitiates blood, then there will be no menstruation. In addition, there will be extreme emaciation and discoloration of the skin. [This ailment of gynecic organs is called Arajaska or amenorrhea.]"²¹

The samprapti begins with vata accumulating and becoming aggravated in the purishavaha srotas. It overflows into the rasa and rakta srotamsi and relocates into the rasa dhatu of the rasavaha srotas. The vitiation of rasavaha srotas causes a systemic decrease in the rasa dhatu, resulting in less menstrual fluid. Locally, the effect takes place at the shukravaha and artavavaha srotamsi. When the shukravaha srotas is vitiated, there's lack of ovulation and no menses.

The artavavaha srotas is the site of bleeding and begins at the uterus. When vata vitiates the artavavaha srotas, bleeding is scanty. A stronger vitiation can result in absence of menses. Therefore, all three srotamsi can be vitiated. The cause of amenorrhea is usually either the systemic depletion of rasa dhatu in the rasavaha srotas or the depletion of the ovaries (shukra dhatu in the shukravaha srotas). Both the rasavaha and shukravaha srotamsi require treatment.

Secondary symptoms should also be considered and treated as they may play a significant role in the cause. For example, weight loss could indicate a degree of malnutrition, which depletes both the rasa dhatu and medas dhatu. Anxiety is another commonly associated symptom, which is due to vata being vitiated in the manovaha srotas.²²

Functional Hypothalamic Amenorrhea Chikitsa

The main qualities of vata are dry, light, cold, rough, subtle and initiates all processes like movements and transformations. According to the Ashtanga Hrdayam, the quality that is most important is dry. Hence, the quality that is most potent in the treatment of vata aggravation is snigdha (unctuous). The quality that is second most predominant is laghu, and hence, in the treatment of vata, the quality of guru (heavy) is very important. So most of the vata balancing treatments are snigdha and guru.²³

The care of vata in the artavavaha srotas is the main focus of chikitsa. For the treatment of gynecic diseases caused by the aggravated vayu, the patient should be given oleation, fomentation, enema and such other therapies which alleviate vayu (with recipes containing vayu-alleviating drugs).²⁴ Vata in the artavavaha srotas is treated with oleation of the vagina or utara basti. Oil may also be applied by inserting and retaining a cotton swab soaked in medicated oil. Lotions, washes and oils may also be applied to the vulva. Following oleation, sudation or fomentation is applied.²⁵

All yoni vyapaad are basically due to the vitiation of vata dosha, even in the pittaja and kaphaja yoni vyapaad, there is a role of vata being deranged. First, we should normalize the vata and then treatment for other doshas should be done. In all yonivyapads, after proper snehana and svedana vamanadi panchakarma procedures should be used, followed by utara vasti chikitsa and other sthanika chikitsa. The vasti chikitsa being the prime treatment for pacifying vataja disorders, the anuvasana vasti, niruha vasti and utara vasti should be followed here.²⁶

Consider the State of the Patient

The state of the patient should also be taken into consideration. The Ashtanga Hrdayam states, "The body of the person should have the ability to tolerate the potency of the medicine and treatments. The person should be self-controlled; the vital body parts, uninjured; have very few causative factors; and, though having prodromal and visible signs of disease, not having any complications."²⁷

There are four qualities a patient should possess when being treated, according to the Ashtanga Hrdayam: "The patient should be affording, obedient, communicative as well as mentally pure and strong. Treatment is a team work. The communication should be open and frank. One should not hide any information from the physician as it may influence the treatment decisions. Regular updates are also important."²⁸

Recommended Therapies

In addition to following the principles of brimhana, women should adhere to a vata-pacifying diet and apply various lifestyle, herbal, body and sensory therapies. These are all discussed in further detail.

Uttara Basti

Of all the therapies, utara basti appears to be the most effective. Uttara basti helps encourage the downward movement of vata. Vasti karma consists of the introduction of medicated decoction or oils through various routes including rectum, urethra or vagina. The vasti chikitsa produces influence all over the body and tries to remove mainly the vitiated vata dosha and also pitta and kapha dosha to some extent. Vasti karma or the ardha chikitsa, as it normalizes vata dosha, is effective in almost all gynecological disorders.²⁹

An unovulatory condition can be effectively combated with the help of administration of Uttar Basti with Phala Ghrita, Phalakalyanaka Ghrita, Shatavari Ghrita and Shatapushpa Ghrita because all these drugs

will have Artavajanana property. When Sukoshna (lukewarm) Sneha / Kwetha enters into the uterine cavity, network of Strotamsi (present throughout the system) carry the Uttar Basti Dravya towards the desired sites (All layers of uterus, fallopian tubes, ovary).³⁰ Following utara basti, fomentation such as a warm bath or hot water bottles placed over the pelvis should be applied.

Herbs

“The medicinal substance should have the capability to be used in different types of formulations, possess many healing qualities, be easily obtainable and appropriate for use in the particular given situation.”³¹

Herbal therapy should focus on tonification and building the rasa dhatu along with nourishing the female reproductive system. Demulcents and reproductive tonics are key. Most nutritive female reproductive tonics are also demulcents. Depending on the herbs chosen, they can also be shukralas and help build the shukra dhatu.

Ayurvedic herbs for Vata-type delayed menstruation include asafoetida, Cyperus, myrrh, ashwagandha, shatavari, and black and white musali. Formulas are shatavari and ashwagandha taken with fresh ginger tea. Chyavan Prash is also helpful as a tonic. A good simple formula is shatavari compound and ashwagandha compound, 2 parts each, and turmeric and ginger, 1 part each. Use 1 teaspoon of the powder per cup of warm water.³²

To treat the secondary symptoms of functional hypothalamic amenorrhea, if there's malnourishment or weight loss, dipanas and fat tonics should be prescribed. If there's fear or anxiety, the manovaha srotas should be addressed via nervine sedatives and tonics using shatavari, ashwagandha or brahmi.

Below are some examples of key herbs and their functions along with sample formulations.

Shatavari (VP-K+)

Shatavari translates to “who possesses a hundred husbands.” It's considered the main Ayurvedic female reproductive tonic. It is highly nourishing, soothing, and moistening and calms the heart. It's an effective demulcent for dry and inflamed membranes of the lungs, stomach, kidneys and sexual organs. It increases milk, semen and nurtures the mucous membranes. It both nourishes and cleanses the blood and the female reproductive organs. It nourishes the ovum and increases fertility, yet its quality is sattvic and aids in love and devotion. Its qualities are sweet and bitter, with a cooling virya and sweet vipaka. Three grams of powder can be taken in one cup of warm milk sweetened with raw sugar.³³

Chavanprash

Chavanprash is an herbal confection or jelly that is an all-around tonic and rasayana. According to Dr. David Frawley, “It is sattvic in quality and gives good fortune, love and longevity—it is itself a long-living tree. Five grams of the powder, mixed in one cup of warm water, can be taken twice a day as a general tonic.”³⁴

Angelica or Dong Quai (VPK=, P+ in excess)

Angelica is one of the best tonics for women, nurturing the uterine organs and promoting their regular function. It is perhaps the best herb for regulating the menstrual cycle. As a tonic, it works best with shatavari. For promoting menstruation, it works well with safflower or saffron. It is a good rejuvenative

for women and works particularly well on Vata individuals. Its qualities are pungent and sweet, with a heating virya and sweet vipaka. Once ounce of the root can be simmered in three cups of water for thirty minutes along with a little fresh ginger. It can be taken one day a week as a uterine tonic.³⁵

Diet

A vata-pacifying diet consisting of warm, moist, cooked foods should be followed. This will help address secondary symptoms of functional hypothalamic amenorrhea such as weight loss and malabsorption. Examples include basmati rice, mung beans, root vegetables like sweet potatoes, carrots and squash, ghee, sesame oil and organic milk (warmed with spices). The ten qualities of milk are sweet, cold, soft, unctuous, dense, smooth, slimy, heavy, slow, and pleasing. These are all qualities similar to ojas and increase ojas.³⁶ Cold, dry and light foods such as salads, raw vegetables and juices should be avoided. The sweet taste is the most healing and should be taken with spices to add warmth. The bitter, astringent and pungent tastes should be de-emphasized as they will contribute to the already dry, mobile and light nature of vata.

Body Therapies

Since the rasavaha srotas is vitiated, causing depletion of the rasa dhatu, oleation is important to begin building the dhatu and adding moisture to the body. Oil massage should be performed regularly. It destroys aging, exhaustion and vata. It improves vision, nourishment, longevity, sleep, health of skin and makes the body strong.³⁷

Therapies such as abhyanga, shirodhara and svedana using sesame oil help remedy depletion. Abhyanga can be performed daily at home using warmed sesame oil. The patient should rub the oil into the body in a vigorous manner to aid absorption. Svedana should follow abhyanga. The purpose of svedana is to increase the body temperature. This causes all the channel systems to dilate, increasing circulation. It should be noted the patient should have proper ojas to perform fomentation therapy. Shirodhara, the application of warm, medicated oil to the forehead, helps tonify the nervous system and the mind. Brahmi prepared in sesame oil is better for vata conditions.³⁸

Sensory Therapies

Anxiety and stress are secondary symptoms that contribute to functional hypothalamic amenorrhea. The Ashtanga Hridayam states, "The best therapies for the mind are nourishing the intelligence, developing will power, and cultivating spiritual knowledge. Patience is for the mind, discrimination is for the intellect, and realization of the self is for the false ego. When the body and mind are perfectly aligned within themselves and with each other, it is the state of perfect health."³⁹

Aromatherapy, color therapy, chanting of bija mantras and gem therapy can help manage vata in the manovaha srotas. The focus is to bring more of the earth and water elements into the body to combat excess air and ether.

Clary sage, rosemary and myrrh are some examples of essential oils that may help alleviate anxiety. According to Dr. Light Miller, "Clary sage is a gift to the female; no woman should ever be without it. It gives women a sense of clarity and empowerment, helping to get rid of monthly bloat, depression, and anxiety, regulating menses, and cooling down hot flashes. It is a gift to the Goddess."⁴⁰

Vata-pacifying colors such as brown, gold, green or purple can be used to meditate on. For more grounding and flow, chanting lam and vam (internally) will support building the muladhara and svadisthana chakras, respectively. Wearing or carrying crystals such as black tourmaline, emerald, pearl or yellow sapphire may also help with grounding and increasing the water element. Pearl has a prabhav for the female reproductive system, is calming and great for building ojas.

Lifestyle and Yoga Therapies

The Ashtanga Hridayam talks about “the golden mean,” stating that: “The sense organs should not be excessively strained or tortured and, at the same time, neither excessively pampered. All activities should be done in accordance with the trivarga (dharma, artha, kama). At the same time, activities should be done in such a way that they do not produce a conflicting situation between the trivargas. Always follow the middle path (or golden mean) in every duty, at every step.”⁴¹

Since functional hypothalamic amenorrhea is attributed to excess exercise, stress and weight loss, patients should try to rest more. Afternoon naps are supportive until healing is complete. Gentle yoga and meditation are also deeply relaxing and help reduce stress. Strenuous exercise should be avoided.⁴²

Asana practice for vata types should emphasize the pelvic region and colon, the main sites of vata. Sitting postures are good for vata, particularly those that create strength and stillness in the lower abdomen like siddhasana (lotus pose) and vajrasana. These postures help develop calm, increase groundedness and control apana vayu.⁴³

In addition to meditation and gentle yoga, performing alternate nostril breathing is also beneficial. Pranayama is an important tool for treating psychological and emotional disorders. It is excellent to counter depression, release grief and attachment, and reduce stress and tension. Pranayama not only exercises the lungs but all the organs in the body through the internal massage action of inhalation and exhalation. This massaging action improves circulation to the organs and dispels toxins, bringing the doshas to the digestive tract for elimination. It sets up a deep and powerful organic rhythm to sustain not only health and strength but calmness of mind. Pranayama enhances the power of tonic herbal therapies to improve vitality, like ginseng, ashwagandha or shatavari.⁴⁴

Conclusion

“One who always eats only what is beneficial, performs only those activities that are beneficial, is closely observant and mindful of everything, is free from any attachment to sense objects, is munificent, is equally disposed to all, is honest, is patient, and accepts the words of the authorities will be free from all diseases.”⁴⁵

In the treatment of functional hypothalamic amenorrhea, there are some parallels between Western medicine and Ayurveda. Both examine the diet, lifestyle and mental state of the patient. Where Western medicine utilizes hormonal therapy, Ayurveda looks to nature in the form of herbal therapy. In some instances, treatment approaches can even complement one another.

With Ayurveda, there’s a focus on the root cause of the disease. By understanding what’s going on in the body from a physiological and hormonal level, combined with the external factors of the patient, a more comprehensive treatment program can be crafted. This allows the woman to truly understand why the imbalance is occurring in the first place, and to take a more mindful, wholistic approach to

healing. Essentially, she’s healing herself from the inside out through the use of various body therapies, herbal formulations, dietary and lifestyle practices. Ultimately, such an approach allows for deeper communication and understanding of the patient on the physical, emotional, mental and spiritual levels.

End Notes

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37. Ibid, AH Su. 2.9. p. 207-208.
38. Marc Halpern. *Principles of Ayurvedic Medicine, 12th Ed.* (Grass Valley: California College of Ayurveda 2019), p. 453-456.
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Research Paper Abstracts

Journal: The New England Journal of Medicine. July 22, 2010. 363;4.

Title: "Functional Hypothalamic Amenorrhea."

Author: Catherine M. Gordon, M.D.

Abstract

Note: No formal abstract was provided, therefore, the summary above the article has been used.

This Journal feature begins with a case vignette highlighting a common clinical problem. Evidence supporting various strategies is then presented, followed by a review of formal guidelines, when they exist. The article ends with the author's clinical recommendations.

Journal: Journal of Endocrinological Investigation. April 22, 2014. 37:1049–1056.

Title: "Functional hypothalamic amenorrhea and its influence on women's health."

Author: B. Meczekalski, K. Katulski, A. Czyzyk, A. Podfigurna-Stopa and M. Maciejewska-Jeske

Abstract

Introduction Functional hypothalamic amenorrhea (FHA) is one of the most common causes of secondary amenorrhea. There are three types of FHA: weight loss related, stress-related, and exercise-related amenorrhea. FHA results from the aberrations in pulsatile gonadotropin-releasing hormone (GnRH) secretion, which in turn causes impairment of the gonadotropins (follicle-stimulating hormone and luteinizing hormone). The final consequences are complex hormonal changes manifested by profound hypoestrogenism. Additionally, these patients present mild hypercortisolemia, low serum insulin levels, low insulin-like growth factor 1 (IGF-1) and low total triiodothyronine.

Aim The aim of this work is to review the available data concerning the effects of FHA on different aspects of women's health.

Results Functional hypothalamic amenorrhea is related to profound impairment of reproductive functions including anovulation and infertility. Women's health in this disorder is disturbed in several aspects including the skeletal system, cardiovascular system, and mental problems. Patients manifest a decrease in bone mass density, which is related to an increase in fracture risk. Therefore, osteopenia and osteoporosis are the main long-term complications of FHA. Cardiovascular complications include endothelial dysfunction and abnormal changes in the lipid profile. FHA patients present significantly higher depression and anxiety and also sexual problems compared to healthy subjects.

Conclusions FHA patients should be carefully diagnosed and properly managed to prevent both short- and long-term medical consequences.

Journal: The Journal of Clinical Research in Pediatric Endocrinology. January 2020. 12(Suppl 1): 18–27.

Title: "Where Have the Periods Gone? The Evaluation and Management of Functional Hypothalamic Amenorrhea."

Author: Marie Eve Sophie Gibson, Nathalie Fleming, Caroline Zuidwijk, Tania Dumont

Abstract

Functional hypothalamic amenorrhea (FHA) is a common cause of amenorrhea in adolescent girls. It is often seen in the setting of stress, weight loss, or excessive exercise. FHA is a diagnosis of exclusion. Patients with primary or secondary amenorrhea should be evaluated for other causes of amenorrhea before a diagnosis of FHA can be made. The evaluation typically consists of a thorough history and physical examination as well as endocrinological and radiological investigations. FHA, if prolonged, can have significant impacts on metabolic, bone, cardiovascular, mental, and reproductive health. Management often involves a multidisciplinary approach, with a focus on lifestyle modification. Depending on the severity, pharmacologic therapy may also be considered. The aim of this paper is to present a review on the pathophysiology, clinical findings, diagnosis, and management approaches of FHA in adolescent girls.

Journal: The International Journal of Research and Review. August 2016. Vol.3, Issue: 8: 4-5.

Title: "Panchakarma Chikitsa in Stree Roga."

Author: G.M. Kavya, Sushila Sharma

Abstract

A healthy woman can make healthy family and ultimately a healthy nation. Healthy state of women is very much needed for the society, its growth and prosperity. Ayurveda, one of the world's oldest systems of health, gives a detailed description of stree roga vyadhis. The fundamental principle followed here in treating these diseases affecting the female genital tract is directing towards Panchakarma chikitsa. The purificatory measures to be followed for the purpose of detoxification of the body itself are shodhana karma. It is the prime factor of the Panchakarma chikitsa. For almost all diseases of the female genital tract, treatment modality starts from shodhana karma. So for women to be healthy, undergoing the

shodhana karma according to the season is very much needed for the prevention of these diseases. Here an attempt is made for the conceptual study and analyzing of complete diseases of Stree roga. All the classical references regarding chikitsa of the same were collected and analyzed. Study of all these chikitsa sutra found beneficial. All of them are directing towards single base line treatment of Panchakarma chikitsa. The vamanadi shodhana karma can only make the women free from these diseases. The conceptual study of these treatment modality also gives the hint towards preventing the same diseases by following Shodhana karma according to the season every year.

Journal: Journal of Ayurvedic and Herbal Medicine. May-June 2016. 2(3): 86-8.

Title: "Uttar Basti- A critical review."

Author: Rashmi Sharma, Chandan Singh

Abstract

In Ayurvedic Gynecology Sthanik Chikitsa (Local therapies) are the specialized treatment procedures. These procedures basically deal with the disorders of Tryavarta Yoni (Three coverings of Vagina). Vitiating of Vata is mainly responsible for Yoniroga and Artava Vikara. "Basti" is best Vata Shamana Chikitsa. Out of this Uttar Basti is most widely used and unique treatment concept of Stree Roga. In this Study Uttar Basti is reviewed through ancient texts and an effort is made to understand the concept of Uttar Basti.