



An Ayurvedic Perception of Primary Amenorrhea for a Blissful Womanhood

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i47B33097

Editor(s):

(1) Dr. Jongwha Chang, University of Texas, College of Pharmacy, USA.

Reviewers:

(1) Swagata Tavhare, G J Patel Institute of Ayurvedic Studies & Research, India.

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(3) Rohini Shyam Waghmare, C U Shah College of Pharmacy, SNDTWU, India.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/75892>

Review Article

Received 20 August 2021

Accepted 25 October 2021

Published 30 October 2021

ABSTRACT

Amenorrhea is the absence of a menstrual period in a during woman's reproductive age. About 3 to 4% of adolescent girls suffer from primary amenorrhea. Primary amenorrhea is not a life-threatening disease condition, but can result in significant complications. Primary amenorrhea can leads to calcium loss which will result in osteoporosis. Osteoporosis manifests with no clinical symptoms, until there is a fracture and results in a reduced quality of life.

Amenorrhea is considered as Anartava in Ayurveda. The concept of Anartava is explained in different contexts. By analyzing those contexts, we can infer that the main causes are Mithyahara and vihara (Improper diet and regimens of mother during the pregnancy period and the girl/woman during her reproductive period), Beeja dosha (Genetic deformities/abnormalities) and Dushtartava (Hormonal imbalance).

Ayurveda is a science that focuses on the quality of living, aims not only in curing the disease rehabilitating but also in preventing it. A good progeny of procreation is a real bliss. In the present scenario, the Primary amenorrhea is one of the gynecological issues which affects the quality of life of a woman and has a wider impact on her physical, psychological and social well-being. Because of the physical, psychological and social impact, it is very necessary to have a look at its causes for the better prevention and management. This promises a generation with better reproductive health.

Keywords: Amenorrhea; Anartava; Beeja dosha; Dushtartava; Mithyavaravihara; Primaryamenorrhea.

1. INTRODUCTION

Menarche is a precious milestone of puberty. Hypothalamo pituitary gonadal axis (HPA Axis) [1] plays a main role in the regulation of the cyclical changes that happens in the female reproductive structures like uterus, ovaries, vagina etc. Any structural or functional change in any of these can result in Primary amenorrhea, which is the failure of attaining menarche by the age of 16. Primary amenorrhea can again be classified into Physiological and pathological forms.

Physiological amenorrhea is the absence of menstruation before puberty and at the time of pregnancy. Pathological amenorrhea can again be classified into that caused due to anatomical deformities and that are caused by endocrine dysfunctions. Based on the onset of amenorrhea it can be classified into Primary and secondary types.

Primary amenorrhea is defined as normal secondary sexual characteristics but no menarche by about 16 years of age or the absence of secondary sexual characteristics by the age of 13- 14 years with no menarche. About 3 to 4%of adolescent girls present with primary amenorrhea [2].

In the present scenario, the Primary amenorrhea is one of the gynecological issues which affects the quality of life of a woman and has a wider impact on her physical, psychological and social well-being. The findings of a study on Disorders of sex development (DSD) affect the quality of life of people show that the participants experienced disappointment in terms of womanhood [3]. Because of the physical, psychological and social impact, it is very necessary to have a look over its causes for better prevention and management. By this we can improve the quality of general and reproductive health of a woman.

2. MAJOR CAUSES OF AMENORRHEA

There are different causes of primary amenorrhea. The majority cases of primary amenorrhea are caused by anatomical defects including anomalies of mullerian development, gonadal dysgenesis, constitutional delayed puberty, elevated levels of follicle-stimulating hormone (FSH), hypothalamic amenorrhea, or

polycystic ovary syndrome, tuberculosis, CNS tumors, idiopathic etc [4].

Various conditions with Amenorrhea [5]

1. Congenital obstructive defects in lower genital tract or imperforate hymen (cryptomenorrhea) in which the patient is menstruating without visible bleeding.
2. Congenital hypoplasia of uterus-Rokitansky Hauser Kuster syndrome
3. Congenital aplasia of ovaries-Turner's syndrome
4. Intersexualism -Pseudohermaphroditism
5. Hypopituitary dwarfism(Empty Stella)
6. Hypothyroid cretinism
7. Delayed puberty
8. Hypothalamic deficiency of GnRH
9. Organic brain lesions -Tumors ,Infections
10. Kallman syndrome

Prognosis of primary amenorrhea mainly depends on its cause. Developmental defects in the female reproductive structures mostly yield a bad prognosis. In conditions like vaginal septum and imperforate hymen there will be false amenorrhea. Prognosis of other types of amenorrhea includes the maintenance of normal levels of hormones of HPO axis. If primary amenorrhea is associated with decreased estrogen and progesterone level, it can be rectified with the supply of synthetic estrogen and progesterone. If primary amenorrhea is associated with decreased estrogen levels, it can cause an increased risk of bone fractures due to reduced bone density which leads to osteoporosis [6]. Increased testosterone levels can also lead to ovarian cysts and infertility.

Ayurved explains the development of secondary sexual characteristics by the age of 12 onwards [7,8,9]. Here also the prime importance is given for Rajopravarthana. Menarche can occur before 12 yrs [10]. In Ayurveda, Menarche is termed as "Rajodharshan" or "Rajopravatti". By the onset of rajopravarthi gradual changes occur in the reproductive life of a woman which led to a drastic change in her lifestyle. The age of menarche gets influenced by specific ahara (dietetics) and vihara (activities) [11]. Acharya Charaka opines though sukra and sonitha are present, proper time is needed for its gross appearance [12]. Here the influence of the Hypothalamic-Hypophyseal-Ovarian Axis and discharge of menstrual blood is denoted by the word avirbhava and thirobhava by Chakrapani.

3. VARIOUS CONDITIONS OF AMENORRHEA IN AYURVEDA

Amenorrhoea is considered as Anartava in Ayurveda. According to Bhavaprakasha it is one among the eighty vata vikaras [13]. Concept of anartava is explained in different contexts. By analyzing those contexts we can derive its 3 potential causes:

- (1) Mithyahara and vihara- during intrauterine life and during reproductive period. According to Bhela Absence of menstruation is a result of reduced blood supply to the entire body which in turn results in reduced blood supply to reproductive tissues [14].
 - (2) Beeja dosha – occurs due to any abnormality of a portion of beeja / beejabhaga / beejabhagavayava (The set of functional units representing the structures and features of all angapratyanga (parts & subparts) of an individual responsible for development of reproductive system. This can be considered at chromosomal and genetic level. Ayurveda (Acharya Charaka [15] and Susrutha [16]) included gynecological disorders under the heading of Yonirogas. Clinical features of certain Yonivyapath are having similarity with that of Primary amenorrhoea.
- Eg (a) Vandhya yoni vyapath [17] -have Nashtaarthava(Absence of menstruation) but other secondary sexual characteristics are present. Here there is congenital absence or abnormalities of uterus as well as ovaries (mullerian agenesis)
- (b) Arthavanasha [18]-According to VrudhaVagbhata menstrual blood is not discharged due to the obstruction of artavavahasrotas (septate uterus, imperforate hymen).

Ayurveda perceives genetics in terms of beeja, beejabhaga and beejabhagavayava, which integrates the chromosomal and gene level of a disease. If a woman is conceived when beeja, beejabhaga or beejabhagavayava of herself and her spouse were not completely vitiated but simply affected by the aggravated Dosa due to their indulgence in Dosa aggravating regimens, these vitiated Dosas may afflict the corresponding organs of the offspring derived from these Beejas and Beejabhagas get deformed.

- (c) Acharya Charaka have explained that vandhya (sterile child) and varta (not a complete female) are occurring due to beeja dosha. When beeja or beejabhagavayava responsible for development of different reproductive organs/parts are affected due to various factors, the child born will be having defective parts of respective reproductive organs/parts. When beejabhaga of mother which is responsible for development of Grabhashaya is vitiated excessively, Vandhya is produced and when beejabhagavayava of mother which is responsible for production of organs that characterize a female is vitiated excessively, then varta [19] (not a complete female) is produced.
- d) In Shandi yonivyapath [20,21] there will be absence of Artava and Sthana. This conditions occurs due to defect of embryological development or congenital hyperplasia of adrenal cortex or hypo-functioning of adeno-hypophysis. This results in abnormal ovarian hormones secretion, which will disturb the development of breast and normal menstruation.
- (3) In Dushtartava there will be abnormal ovarian hormones. Artavavaha srotus is responsible for formation and maintenance of menstrual cycle. They are channels which carry nutrients to female reproductive structures. Any trauma to Atvavaha srotus can lead to Artva Nasa [22].

Modern science also categorize two major reasons for delayed puberty-(1) malnutrition or under nutrition, prolonged high levels of physical exertion e.g. athletes (2) defects in the reproductive system- (a) hormonal level,(b) Mullerian duct level, Mayer–Rokitansky–Küster–Hauser syndrome.

4. MALNUTRITION OR UNDER NUTRITION

Studies show that Subnormal vitamin A intake is one of the causative factors in late adolescent maturation [23]. Iron and Protein deficiency induced anemia, Lower BMI, etc can predispose delayed menarche. In the induction of growth and puberty supplementation of both vitamin A and iron to normal constitutionally delayed children with subnormal vitamin A intake is as effective as hormonal therapy.

5. PROLONGED HIGH LEVELS OF PHYSICAL EXERTION

As a part of physical fitness or beauty consciousness many women do strict diet control along with more strenuous exercise without the intake of enough calories. Women who do regular exercise and significantly lose weight are more likely to develop hypothalamic (or 'athletic') amenorrhea. For them there will be rise in level of hormone ghrelin. This results in inhibition of the hypothalamic-pituitary-ovarian axis. Elevated concentrations of ghrelin can alter the amplitude of GnRH pulses. Further there will be diminished pituitary release of LH and follicle-stimulating hormone (FSH). Long-standing amenorrhea can lead to an estrogen deficit. For the regulation of calcium loss after ages 25–30 estrogen is an important factor. Prolonged estrogen deficiency may lead to calcium loss which in turn can lead to osteoporosis [24].

6. DEFECTS OF REPRODUCTIVE SYSTEM

This can be due to defect in mullerian duct development (congenital cause) or reduced female hormonal secretion (Hormonal level cause) or elevated testosterone. There will be decreased breast size body and hair growth when there is increased testosterone level [25]. Some research among amenorrhea runner's victims suggests that it can lead to loss of self-esteem.

Few clinical conditions with defects in reproductive system development is included in Table 1 [26,27,28].

Table 1. Defects in reproductive system example

Name of the condition	Clinical presentation
Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome	Incomplete development of the Müllerian duct resulting in maldevelopment or absence of vagina and uterus leading to absence of menstruation
Kallmann syndrome	Failure to start or a failure to complete puberty
Asherman's syndrome	Adhesion of endometrium.
Turner syndrome	Partial or complete missing of an X chromosome

7. PREVENTION IN PRESENT SCENARIO

Women go through different stages of life. It includes pre pubertal, pubertal, reproductive-antenatal and postnatal, peri-menopausal and postmenopausal periods. Puberty and peri-menopause distinguish between the beginning and the end of a woman's reproductive life cycle, which are the two major changes in a woman's life. The survival of all living things has a fundamental priority in the changing ecological context. Survival often depends on the ability to cope with various homeostatic challenges. By the physiological analysis of the complete life cycle of a woman, we can assume that the biological development and the influence of social factors have a major impact on framing the reproductive health of a woman which definitely determines the quality of life for the rest of her life. The state of metabolism in the female body changes at different stages of a woman's life due to the interaction of hormones under the HPO axis. The menstrual cycle represents the development of proper reproductive physiology in a woman. Various genetic, social, economic factors and environmental factors may affect womanhood. The regulation of lifestyle should be done according to the metabolic needs of the body by giving due care to her state of prakruthi, doshadhathu mala and agni.

Ayurveda explains special protocols to be followed at various stages aimed at ensuring proper progeny and a healthy child. Special diet and lifestyle modifications before and during the menstrual cycle have been explained in Ayurveda, that can be related to the metabolic and hormonal status in the body. Therefore, different phases of the life cycle of a woman require specific protocols according to their metabolic needs of the body.

This can be better explained as the need of

- a. Effect of Pre conceptional care
 - Need of pre-coneceptional factors
 - Effect of preconceptional care on genetic and Chromosomal level
 - Prevention of genetic deformities
- b. Effect of Diet and activities
 - Effect of healthy diet
 - Effect of healthy lifestyle
 - Effect of personal hygiene

- Following the daily and seasonal routines as prescribed in Ayurved
 - Need of seasonal purification measures of body
- c. Effect of Mental health (Psychological and Psychosomatic level)
- Effect of mental health during intrauterine period
 - Effect of mental health during the reproductive age period
- d. Management of structural and functional defects
- Correction of Artava dosha
- e. Improvement of quality of life

a. Effect of Pre-conceptual care

The Garbha sambhava samagri or the factors that contribute to the growth and development of an offspring determines the formation of healthy progeny. Any condition that interferes with ovulation, fertilization, or implantation can lead to the defect in development or malformations in the fetoes. In the preconception phase, the quality of four factors ritu, kshetra, ambu and beeja must be improved. By considering these factors proper growth and development can be ensured.

The specific changes occur inside the streebeeja and garbhasaya for accepting the sukra for attainment of conception. As kala dosha described in Ayurveda is one of five main causatives for congenital anomalies.

As a seed of any plant sowed in a properly ploughed and fertilized land yields good fruits. Similarly, impregnation done after proper regimen results in offspring of high qualities or else the born child may have certain abnormalities. So both couples can choose the right cleansing treatments described by Ayurveda before becoming pregnant. Especially if there are any familial tendencies to have reproductive defects then better to do shodhana therapy before planning to get conceived. The combination of medicines and regimens mentioned in Garbhinicharya context can be executed.

Ayurveda explains about the influence of healthy Beeja, Beejabhaga and Beejabhaga Avayava on

the proper development of reproductive structures under the influence of HPO Axis. AcharyaCharaka explains that the Panchakarma sodhana before the planning of conception, which will prevent the chances of occurrence of genetic deformities (Vikrutha Garbha). Here a direct information about the need of pregnancy as a planned one and the need of preparation of both partners for a healthy progeny is also been highlighted [29].

b. Effect of Diet and activities

Diet (Ahara): Maintaining a well-balanced nutritious diet is very much essential for a healthy body, and this requirement is one step ahead in preparing a healthy womanhood. The importance of a balanced diet has been explained by the Kasyapa for the reproductive health of a woman. The balanced diet has to be followed in all the three stages i.e.(1) before conception (2) during pregnancy (3) after delivery of foetus (infant to adolescence). Avoid junk foods and over nutrition as those lead to malnutrition again.

Activities (Vihara): Having a stipulated exercise plan (vyayama) and avoiding the factors responsible for sedentary life like too much usage of TV and social media like facebook, instagram and whatsapp. A proper and intermittent relaxation to releases stress will give a qualitative improvement in living. Avoiding extreme climatic conditions or such environmental factors also should be considered as it will affect hormonal balance which can alter the reproductive health and the development of secondary sexual characteristics.

Ayurveda have a very systematic description of various factors responsible for good progeny, specially prescribed dietetic regimen and mode of life. Hence ritumaticharya-Special Diets and regimens that can be adopted during menstrual cycle, Garbhini Charya-Special Diets and regimens that can be adopted during pregnancy and Soothika Charya-Special Diets and regimens that can be adopted during postpartum period can be followed systematically. Daily regimens (DinaCharya), SeasonalRegimens (RthuCharya) and the seasonal purification measures (Sodhana) to be done so as to prevent the accumulation of toxins inside the body is also been highlighted in this ancient wisdom of knowledge. By following these the genetic and epigenetic factors can be corrected and can run a better quality of life.

c. Effect of Mental health (Psychosomatic and Psychological level)

A healthy mind resides in a healthy body. Mental health affects a person's physical and social well-being. Sleep patterns and work performance are affected. Therefore, great importance should be given to the mental well-being of women of reproductive age. Hence the need to solve physical problems. Particular attention can be paid to the physical and mental health of adolescent girls. Its negligence may affect the physical and mental well-being of present and future generations.

Early detection of structural abnormalities and hormonal imbalances and proper medical support at the appropriate time gives immediate relief from the condition. However, some of the genetic abnormalities are exceptional from this as the prognosis in such cases is bad.

d. Improvement of quality of life

In the present era majority of the woman have to face challenges in her day to day life. Hence giving more importance to her quality of life by means of intake nutritious food in proper quantity, following healthy exercise habits and maintaining good mental health can influence the physical and psychological wellbeing of her and future generations. Physical and mental exercises may be included as a compulsory part of academic curriculum. Certain Yoga asanas like Patchimothasana, Bhujangasana, Vajrasana, Shavasana and Pranayama makes the body and mind cool and calm [30,31].

Sex education, awareness of importance of reproductive health, importance of mental health can be introduced in the school curriculum from the primary levels. This may help to maintain the normalcy of hormonal levels of adolescent girls. More over correction beejabeejabhaga and beejabhagavayava can save genetic disorders of forthcoming generations.

8. CONCLUSION

Propagating the values of traditional and cultural norms regarding menarche, menstrual hygiene and reproductive health helps retain the equilibrium of tridosha and thereby maintain normal health. As the women is the necessary factor for continuation of generations. Reproductive health of a woman needs special attention to have a blissful womanhood. Healthy

reproductive status of a woman adds on a healthy forthcoming generation. So, incorporation of Ayurvedic regimens in the school health program may satisfy the need.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:

The peer review history for this paper can be accessed here:

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