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AN APPROACH TO STUDY ABOUT ARTAVA AND ARTAVA CHAKRA

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ABSTRACT

Menstrual blood is regarded in Ayurveda as an updhatu of rasa dhatu. In women, it often starts at age twelve and lasts until age fifty. It is a monthly bleeding that lasts for three to five days. Currently, the term "normal menstruation" refers to cyclical bleeding from the uterine corpus that takes place between menarche and menopause. Rajastravakala, Ritukala, and Rituvyatitkala are the three phases of the artavachakra (menstrual cycle), which correlate to menstruation, proliferation with ovulation, and secretory phases of the endometrium, respectively. The ritukala is a woman's endometrial cycle's fertile time. Artava is referred to by a number of different names, including Rutu, Raja, Shonita, Lohita, Pushpa, and Bija. In this article, an effort has been made to identify any potential connections between this phrase and examples from contemporary physiology.

KEYWORDS: Menstruation, Ritukala, Rituchakra, Rajahsravakaala.

INTRODUCTION

The "science of human life," referred to as Ayurveda, focuses on a person's physical, physiological, and mental wellness. The state in which the dosha, agni, dhaatu, mala, and

all physiological functions are in a homeostatic state is referred to as general well-being in Ayurveda.[1]

The monthly occurrence of menstruation in women is a natural occurrence and in most of the women menstruation occurs between menarche and menopause.

menstruation can have a significant impact on one's physical, emotional, and social well-being, menstrual health is an essential component of overall health for women.[2] Regular bleeding from the uterine corpus that occurs between menarche and menopause is referred to as normal menstruation.[3] Ritukala is a crucial physiological manifestation for Garbhotpatti in womanhood, according to Ayurveda, and it is what gives her the identity of a mother. For this reason, every woman needs to understand the notion of the artavachakra.[4]

When a woman is in her reproductive age, the artavachakra cycle repeats every month. Menstruation, or aartva, is not always represented by a single entity in Ayurveda. However, it has a number of synonyms, including Rutu, Raja, Shonita, Lohita, Pushpa, and Bija. The results of a variety of ayurvedic classics searches using the keywords Artava, Raja, and Shonita are shown in (Table no. 1).

Ayurveda is a functional understanding-based empirical science. It is necessary to comprehend Ayurvedic terminology in terms of contemporary science. One of these is artava and the artava chakra.

Therefore, in this article, we are attempting to make comparisons between ancient and modern literature.

Table 1: Various references searched with keywords Artava, Raja, Shonita in Ayurvedic classics.

Sr. No		Charak[5]	Sushruta[6]	Vagabhatta[7]
1.	***Artava as menstrual blood***	Ch.Ni. 3/14, Ch.Chi 28/11, Ch.Chi 30/14, Ch.Chi 30/225-226, Ch.Su 25/40, Ch.Si 9/62	Su.Su.15/5, Su.Su.15/12, Su.Su.15/16, Su.Sh.2/5, Su.Sh.2/12,17,21,	A.H. SU. 12/9, A.H. SU. 19/77, A.H. SA. 1/17-18, A.H. SA. 1/100, A.H. NI. 11/33,50
2.	***Artava as Ovum***	Ch.sha 2/14, Teeka Ch.Chi 30/3-8 ,	Su.Su.14/6, Su.Su.14/14, Su.Sh.2/39	A.H. SU. 1/9, A.H. SA. 1/83
3.	***Raja as menstrual blood***	Ch.Su. 8/22, Ch.ni. 7/14, Ch. Sh. 3/4, Ch. Sh. 4/7,	Su. Su. 14/6, Su. Ut. 38/9,	A.H. Sa 1/21, A.H. Ut 33/33, A.S.Sh. 1/21

		Ch. Chi. 30/209		
4.	***Raja as Ovum***	Ch. Sh. 2/34	--------	----------
5.	***Shonita as menstrual blood***	-------	Su.Sh.3/13	---------
6.	***Shonita as Ovum***	Ch. Sh. 3/3, Ch. Sh. 4/5, Ch. Sh. 4/7, Ch. Sh. 4/30,Ch. Chi. 30/29	Su.Sh.4/63, Su.Sh.5/3, Su.Sh.10/57	A.S.Sh. 2/44

Why Monthly Sexual Cycle Doesn't Appear During Childhood

Acharya Charak has explained that purusha is similar to the loka. Whatever specific murtimantabhava (embodiment) are present in the loka, the same are in the purusha. Similarly, whatever is in purusha, is also in the loka.[8]

According to Acharyas Vagbhata, just as young or old plants do not produce flowers or fruits, so females before the age of twelve and after the age of fifty do not exhibit Raja (menstrual flow) or Stanya (milk), which are both invisible.[9] The anterior pituitary gland secretes the gonadotropic hormones FSH and LH, which are entirely responsible for the ovarian alterations that take place during the sexual cycle. Since almost no pituitary gonadotropic hormones are secreted during childhood without these hormones, the ovaries remain dormant. Normal monthly sexual cycles start between the ages of 11 and 15 years old as a result of the pituitary's gradual increase in FSH and LH secretion, which starts between the ages of 9 and 12 years. Menarche, or the beginning of menstruation, occurs during this time of transition known as puberty. The granulosa cells are thought to nurture the ovum and emit a substance that prevents it from maturing, which keeps it suspended in its primordial state throughout the prophase stage of meiotic division throughout childhood. Then, following puberty, the ovaries grow and the monthly sexual cycle starts when the anterior pituitary gland starts to secrete significant amounts of FSH and LH.

Role of Artava in Conception, Placenta Formation and Development of Breast

The formation of eggs in the ovaries is the first step in reproduction. Each month, in the middle of the sexual cycle, an ovarian follicle releases one ovum into the abdominal cavity, close to the open, fimbriated ends of the two fallopian tubes. If fertilised by a sperm, this ovum then passes through one of the oviduct and enters the uterus, where it gets embedded and develops into a foetus, placenta, and foetal membranes before becoming a baby. Artavachakra (menstrual cycle) stops when the fertilised ovum implants into the uterus as a result of obstruction in the artava srotas. Due to obstruction, the artava ascends and forms the placenta. The remaining artava hormones—estrogen, progesterone, oxytocin, and pregnancy

hormone which is HCG — move upward to nourish the mammary glands and get it ready to produce milk.[10]

Ritu Chakra (Female Monthly Sexual Cycle)

The period of 28 days of monthly sexual cycle is divided into three phases-

1. Rajastrava Kala (menstruation) - 3 to 5 days
2. Ritu Kala (proliferative phase including ovulation) - 12 to 16 days
3. Rituvyatita Kala (post ovulatory/ secretory phase) - 12 to 14 days

Table 2: Regular menstruation is solely dependent on the level of hormones of hypothalamus –pituitary – ovarian axis.

CYCLE	**Pre-ovulation**			**Post-ovulation**
Ovarian Cycle	Follicular phase		OVULATION	Luteal phase
Uterine Cycle	Menstruation	Proliferative		Secretory

CHANGES DURING RAJASTRAVA KALA (Menstrual Phase)

In a healthy woman, menstruation typically begins at the age of twelve and ends at the age of fifty.[11] The monthly blood, which is slightly dark in colour and discoloured and is transported to the cervix by apana vayu, collects in the layers of endometrial of the uterus for a month from the two arteries (two uterine arteries and partially by the ovarian arteries).[12] The start of necrosis, namely in the blood vessels of the endometrium, is what causes the blood to appear slightly black and discoloured. Normal menstruation lacks stickiness, a burning sensation, is painful, lasts for five days, and is neither too little nor too much. Its natural coloration does not stain clothing and is similar to the red fruits of the Abrus precatorius, the red lotus flower, the indragopaka bug, rabbit blood, or liquid shellac.[13,14]

Menstruation is brought on by a decrease in oestrogen and progesterone, particularly progesterone, near the end of the monthly ovarian cycle. The stimulation of endometrial cells is reduced when hormone levels are low, and the endometrium quickly involutes to around 65% of its original thickness. Prostaglandins of the vasoconstrictor type, which are produced in large quantities in the endometrium and cause the mucosal layers of the endometrium to become vasospastic due to tortuous blood vessels. Because of this, blood initially penetrates into the endometrium's vascular layer, and eventually the surface layers of the endometrium have desquamated. The desquamated tissue and blood in the uterine cavity, the hormones that cause uterine contractions to discharge the uterine contents, the prostaglandins or other substances in the decomposing desquamate may have contractile effects. There are different

notions on the duration of the menstrual cycle, which last between three to seven days. days.[15,16,17] prostaglandins or other substances in the decomposing desquamate may have contractile effects.

Changes During Ritukala (Preovulatory phase)

Ritukala can be seen as the days that pass between the conclusion of menstruation to the start of the secretory/luteal phase in a normal menstrual cycle of 28 days. Ritu typically lasts for twelve to sixteen days18, and if Yoni, Garbhashaya, and Artava are all in good health, it might last the entire month. Ritukala may occasionally bleed vaginally.[18,19]

The cervix of the uterus rests in a constricted state for the first three and final days of the sixteen-day ritukala, according to commentator Dalhana. Due to the cervix's restriction, fertilisation is not possible during this time. Therefore, ritukala has an actual duration of twelve days. Ritukala is a phrase used to describe this time since seeds deposited during this time are also likely to bear fruit.

The pituitary starts to secrete progressively more FSH and LH during this ritukala phase. By interacting with incredibly precise receptors on the ovarian target cell membrane, FSH and LH both stimulate their ovarian target cells.[20]

However, when the ritukala expires, a woman's uterus (os) closes in a manner similar to how a lotus flower closes at the end of the day.[21]

Changes in ovaries during ritukala (follicular phase)

The follicular phase starts on the first day of menstruation and lasts for thirteen to fourteen days ending in ovulation.

After puberty, when the anterior pituitary gland starts to secrete FSH and LH in significant amounts, the ovaries and 5–12 follicles start to grow.

These hormones cause primordial follicles to mature into preantral and mature (preovulatory) follicles before antral follicles. Following puberty, when the anterior pituitary gland starts to produce significant amounts of FSH and LH, the ovaries and 5– 12 follicles begin to mature. Primordial follicles are transformed into preantral and mature (preovulatory) follicles by these hormones before antral follicles. Only one follicle completes maturation each month; the others atrophy and die. Large levels of oestrogen are secreted from rapidly expanding

follicles, which is the cause of atresia.[22]

OVULATION

Ovulation occurs 14 days after menstruation starts in a typical female reproductive cycle. However, based on our understanding of how rasa is transformed into other tissues over time, we can derive the concept of ovulation. According to Acharya Sushruta, the process of turning rasadhatu into the subsequent sukra dhatu takes around one month. The rasa dhatu changes from artava in females to sukradhatu in males in a month. This month's raja/artava may be regarded as the ovulation. LH is necessary for final follicular development and ovulation. Without LH, the follicle did not progress to the ovulation stage. During this time, the anterior pituitary secretes LH at a rate that is 6–10 times higher than normal. LH causes the granulosa and theca cells to change into progesterone-secreting cells, and oestrogen output begins to decrease.

Changes in uterus during ritukala (Proliferative phase)

Within the uterus, the proliferation phase takes place. The endometrium, the lining of the uterus, thickens during this phase. In response to the oestrogen released by the follicles, the uterus is repairing the lining that was just lost during the previous period, and the ovaries are striving to develop the egg-containing follicles.[23] In order to offer a site for a possible fertilised egg to implant and develop, the uterus does this.[24]

CHANGES DURING RITU VAYATITAKALA (Luteal phase/Secretory Phase)

Rituvayatitkala can be regarded as the days that pass between the conclusion of ovulation to the start of menstruation in a typical menstrual cycle of 28 days. This kala lasts for roughly 14 days. It is comparable to a lotus flower that shuts after dusk.

Changes in ovaries during rituvyatitakala (luteal phase)

The luteal phase of the menstrual cycle comes next. In a typical sexual cycle, this period lasts from day 14 to day 28. After ovulation, the remaining cells (granulosa and theca interna) quickly transform into lutein cells over the first few hours of rituvayatitkala. The lipid inclusions that fill the lutein cells and give them a yellowish hue are known as corpus luteum. The female sex hormones progesterone and oestrogen are secreted in high quantities by the granulosa cells of the corpus luteum. Theca cells play a major role in the formation of the androgens (androstenedione and testosterone). If an egg is fertilised, progesterone from the corpus luteum encourages an early pregnancy. The corpus luteum will turn into the corpus

albicans after 7 to 8 days if fertilisation does not take place. It transforms into connective tissue in the days that follow and is absorbed over months. Many people experience the typical premenstrual symptoms, which are brought on by hormonal changes that take place during the luteal phase and include mood swings, headaches, acne, bloating, and breast tenderness.[25]

Changes in Uterus during Rituvyatitakala (Secretory Phase)

During this phase, the endometrium gets ready to either support a pregnancy or degrade in preparation for menstruation. The progestrone and estrogen are simultaneously released in large amount after ovulation significantly increases endometrial edoema and secretory development during this cycle phase while oestrogen only slightly increases endometrial cell proliferation.

Causes of Congenital Abnormalities

One of the prenatal elements used to determine a progeny's prakriti is maturity of the ahara-vihara.[26]

These dosha spread throughout a woman's body when she engages in ahara vihara that aggravates these doshas. When it reaches the ovum and the uterus, including the fallopian tubes, and if it vitiates part of the ovum and the chromosomes, then abnormalities may develop in the corresponding organs.[27] (Table no. 3).

Similar to this, when a sperm gene is significantly vitiated, it causes abnormal development in the offspring (Table no. 4).

Table 3: Deformities caused by the vitiation of the ovum.

SR.NO.	Cause (vitiation of the ovum)	Effect	Features
1.	Garbhashayabijabhaga (Gene related to uterus)	Vandhya	Infertile female child
2.	Garbhashayabijabhagavayava (Chromosome)	Putipraja	Child dies before delivery
3.	Garbhashayabijabhagavayava + part of female body producing beejabhaga	varta	Birth with female appearance but actually is not a female

Table 4: Deformities are caused by the vitiation of the sperm.

Sr.no.	Cause (vitiation of the Sperm)	Effect	Features
1.	**Beeja (gene of a sperm)**	Vandhya	Sterile child
2.	**Beejabhagavayava (chromosome)**	Putipraja	Whose child dies before delivery
3.	**Beejabhagavayava of sperm + portions of the beejabhaga, (responsible for the production of organs that differentiate a male)**	Trinaputrika	A child who is not a male but only having masculine distinctiveness in abundance.

DISCUSSION

The "science of human life," Ayurveda, addresses an individual's physical, physiological, and psychological welfare, which includes all characteristics of a person's life. Ayurvedic beliefs are based on practical knowledge and are intended to prevent disease, stop it in its tracks, and provide cures root. Additionally, Ayurveda has provided guidance on how to behave while menstruating.[28] We have addressed this gap in this text using modern, contemporary physiology. RajastravaKala, Ritukala, and Rituvyatitkala, which correspond to menstruation, proliferation with ovulation, and secretory stages of endometrium as shown in table No. 2, are the three phases of the Artavachakra (menstrual cycle). Also in ayurvedic classics, artava (menstruation) is not represented by a single entity at all the time. This Artava is in responsible to maintain organogenesis, breast development, and conception Ayurveda is a functional understanding-based empirical science. It is necessary to comprehend Ayurvedic terminology in terms of modern science. The menstrual cycle in women are controlled by the hormone levels in the hypothalamus-pituitary-ovarian axis, which impacts the follicular development of the ovulation, luteinization, luteolysis, and endometrial remodelling. However, since these hormones are absent during the childhood period, the ovaries remain inactive because pituitary gonadotropic hormones are not released. The reason why the monthly sexual cycle doesn't appear throughout childhood was also described by Acharyas Vagbhata. We are attempting to make comparisons between ancient and modern literature in this post.

CONCLUSION

In this article, we tried to collect various references from textbooks of modern medical science, various articles, from various ayurvedic textbooks and available commentaries, The concept of menstruation is in a very detailed and clarifying way explained in ayurveda as compared to modern which are helpful to spread awareness regarding menstruation. We can use this concept to understand the present day pathology which is seen in female and hence an effective treatment can be planned.

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