ORIGINAL ARTICLE

Monthly menstrual cycle in *Bun-Dahišn*, an ancient Persian Manuscript

Abstract

The history of Persia (Iran) dates back 10,000 years. Iranian history prior to the introduction of Islam in 637 AD is classified as ancient Persia but unfortunately, very little written evidence remains from that period. Furthermore, there is little current investigative research on this period of Iranian history, so it remains largely unclear, particularly in the case of medical scientific thought. The last period of this era was the Sassanid dynasty (224-637 AD). Some of the manuscripts remained from this period are written in the Pahlavic language, illuminating this dark period in the history of medical science. One of these ancient Pahlavic manuscripts is entitled "*Bun-Dahišn*". It is analyzed in this paper to uncover ancient Persian wisdom on the female monthly menstrual cycle. The book is fundamentally about genesis and creation rather than medicine, but it holds valuable information about attitudes of the time to the female menstrual cycle. The manuscript describes the female menstrual cycle in terms of three phases. The first of which is the *Pēš-ābest*, phase of the female reproductive cycle; *Ābast*, refers to the second phase; and the third phase is termed *Daštān* and refers to the menstrual period itself. This is the principle concept conveyed in this manuscript, which can be related to current concepts of gynecology. However, in comparison with other ancient civilizations, it can be considered as a novel and advanced theory. Regarding this ancient text from a current perspective and in relation to modern knowledge in the field is an insightful way to track the progression of thought in gynecology.

Key words: Menstrual cycle; Persia, Gynecology, *Bun-Dahišn*, Ancient history, History of medicine

Received: 17 Jun 2013; Accepted: 18 Jul 2013; Online published: 1 Aug 2013

Research on History of Medicine/ 2013 Aug; 2(3): 79-86.

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Introduction

The history of Persia (Iran) dates back 10,000 years. The period before the introduction of Islam to Iran in 637 AD is known as ancient Persia. Unfortunately few written records on science from ancient Persia have survived. Furthermore, there is currently a lack of investigative research on this era so the history of medical science remains vague and unclear.[1] So any attention given to a surviving manuscript from this era will provide scholars with an illuminating insight into some of the darker points in the history of the medical science.

The last ancient Persian kingdom was the Sassanid dynasty (224-637 AD) and people at that time spoke and wrote in the Pahlavic language.[2] Some Pahlavic manuscripts available are very important resources to investigate the medical scientific thought of the era.[3]

Materials and Methods

In this study, the menstrual cycle described in the ancient book of *Bun-Dahišn* was scrutinized and is compared with ancient knowledge about this cycle in other civilizations, such as ancient Greece and Rome.

Results

Bun-Dahišn

Bun-Dahišn (*Bundahišn*) which means "Primal Creation" or "Primal Genesis", like most books of the Pahlavi era refers to a diverse collection of subjects collected from various different sources.[4] These books do not necessarily have one particular editor or author. The original name of the book now known as *Bun-Dahišn* was probably "Zand Agahi". Some historians believe that major parts of the book were gathered and edited during the late Sassanid period while some others maintain that the final editing was done by Gharnigh (9th century AD). There are currently two remaining versions of the *Bun-Dahišn*, a Persian version and an Indian one. The Indian text, which has been copied in India, is short and brief but the Persian edition is bigger and commonly referred to as the "Big *Bun-Dahišn*" or "The Greater *Bun-Dahišn*". Three copies of the Persian *Bun-Dahišn* are available: TD1, TD2, and DH. TD1 and TD2 were transported from Iran to India in the 19th century; however, it is not known how and when the third copy was transported to India.[5]

The text of the *Bun-Dahišn* (*Bundahišn*) is generally con-

1- Mohagheghzadeh et al, 2011: 18-23.
2- Zargaran et al, 2011: 103-10.
3- Adhami, 2011: 331-51.
4- Ibid.
5- Neil MacKenzie, 2012.

cerned with the myths about the creation of the world but it also incorporates many scientific subjects such as astronomy, zoology, botany and geography. There is one chapter of the book that has birth and birth related issues as its central theme. It focuses on how different species give birth, describes female reproductive physiology explains the female monthly menstrual cycle. The text is therefore of great importance because it shows that the ancient Iranians recognized female menstruation as a monthly cycle within a reproductive system.[6]

Current knowledge about monthly menstrual cycle

Female menstruation occurs from the onset of puberty until menopause at the age of about 45–50. It is the cyclical discharge of blood from the uterus of a non-pregnant female. The duration of a woman's menstrual cycle is variable, ranging from 21 to 35 days. This cycle is controlled by hormones secreted from the hypothalamus-pituitary-ovary axis. During the menstrual cycle, there are alterations in levels of ovarian hormones that lead to changes in the endometrium that prepare the uterus for embryonic implantation. Therefore, a woman is only fertile during years when she is experiencing the menstrual cycle.

Understanding mechanisms behind the menstrual cycle have helped human beings to develop some natural methods of contraception such as the calendar method, the cervical mucus method, the basal body temperature method and the sympathetic thermal method. In the calendar method, that is commonly used nowadays, a woman can estimate her fertility period by considering her usual menstrual cycle. In this method, the fertility period is estimated by subtracting 18 days from the shortest menstrual cycle and 11 days from the longest menstrual cycle. In a simpler method, the fertility period in women whose menstrual cycle lasts from 26 to 32 days is considered from day 8 to 19.[7]

Monthly menstrual cycle in *Bun-Dahišn*

The below text is the translation of the original text of the *Bun-Dahišn* about fertilization:

"1. On the <different> manners of birth of every species:
2. It is thus stated in the Religion: a woman who is washed from the menses, for ten nights <after that> when she is approached, she is estrous (*pēš-ābest*);

6- Ibid.
7- Ronald et al, 2008: 581.

mare, jenny, and onager are so in seven nights, a bitch and sow in five nights and mouse and the she-goat in one night and the cow is the same and the burrowers and aquatic animals in one night.

3. And menstruation is <in> a woman and the menstruation of the cattle is *wardagīh*, for <when> the sheep are *wardag*, they urinate blood. A woman, as long as she is mensturous, will be without child, but in those ten nights she'll be estrous. After she's washed from menses, then the time of conception has arrived.

4. When the seed of the man is more powerful, a boy <is begotten>, and when that of the woman is more powerful, a girl; when both seeds are of equal <power>, there would be twins and triplets from them.

5. If the seed of the males comes first, it becomes (*būd*, lit. 'was') fat and adds to the female and she becomes fat from it; if the seed of the female comes first, it becomes blood and weakens the female.

6. The seed of females is cold and wet and its flow is from the loins (*pahlūg*) and its colors are red and yellow; the seed of the males is hot and dry and its flow is from the cerebrum of the head and its colors are white and light (*xašēn*).

7. Accordingly, the seed of the females comes first and settles in the uterus.

8. The seed of the males stays on top and fills the uterus and whatever overflows from it, will cause lactation and the excess returns to the blood and enters the vessels of the females and at the time of parturition it will return as milk; after parturition, the child is nourished by it as the milk is <caused> entirely from <the action of> the seed of the males.

9. Thus the seed of the males, similar to the rennet milk (*frušag*), coagulates the blood of the females.

10. And they <i.e. the male and female seeds> mix at the mouth of that uterus.

11. The mixture of <the seeds of> the camels stays as seed for 40 days, that of a human and the horse species and cows and others of this kind for 30 days, that of sheep for 16 days, that of dogs for 10 days, that of foxes for 7 days, that of a weasel for 5 days and that of mice for 6 days.

12. Then for 3 days it stays as a mixture <which> then, is <a mixture of> the semen and <menstrual> blood;

when it grows as an embryo (*daštag*) inside <the uterus>, the eyes, ears, nose, and mouth, as well as the hands and feet and other limbs, grow from it; and all the bones and hairs are from the fathers and blood and flesh from the mothers.

13. And then <the pregnancy> of camels will become evident on the mother in 6 months, that of humans and horse species and cows in 5 months, that of a weasel in one month, and that of mice in 15 days.

14. Every food that the mother consumes, the growth of these <embryos> will be from it; then camels in 12 months, humans and horse species and cows in 10 months, and the sheep and dog in five months, fox and pig in 3 months, weasel in 2 months, and mice in one month give birth.[8, 9]"

8- Adhami, 2011: 331-51.
9- Dadegi, 2006.
10- Pakzad, 2005: 198-201.

As demonstrated, this monthly cycle was classically divided into three phases in the *Bun-Dahišn*. These phases were referred to as *Daštān, Pēš-ābest* (which means pre fertility), and *Ābast* (which means fertility) (Fig. 1).

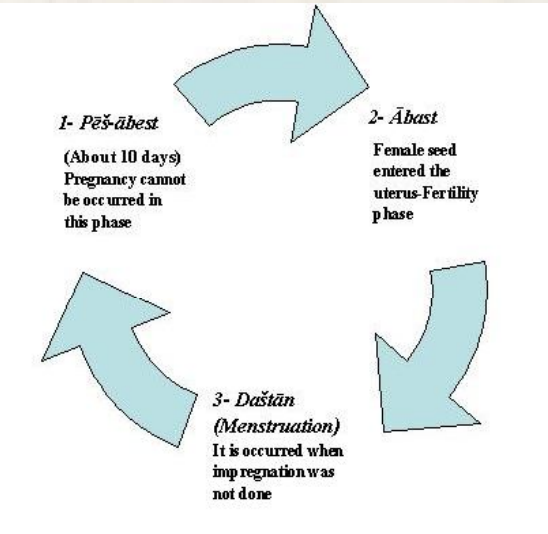

Figure 1. Menstural cycle in Bun-Dahišn

It was believed that this cycle was present in female animals as well as humans. Here is a brief explanation of the cycle:

1. *Pēš-ābest* was considered as the first phase of the female reproductive cycle and covers the period following menstruation. In human beings, this phase lasts for 10 days, and females cannot become pregnant during this phase of the cycle even if they have intercourse. Therefore, it was perceived

that this phase was a safe time for having intercourse without becoming pregnant. It was believed that the length of this period may be different in different animals and among various species; for example, it lasted for 7 days in horses but only 5 days in dogs and pigs.[10]

2. *Ābast* is the term for second phase of the reproductive cycle described in the manuscript. It refers to the phase after *Pēš-ābest*, until the beginning of menstruation or *Daštān*. It was believed that a female was fertile during this phase. The length of this phase of the cycle was not considered in terms of a specific period of time so ancient Iranian identified this period as variable among women. It was believed that during this phase, the female seed, which was perceived as having a cold and wet temper and a yellow-red color, originated from the flanks of a female and then entered the uterus. It was believed that if a male seed was present at that time, female and male seeds would combine and the woman would become pregnant. But if a male seed was not present, the woman would become weak and bleed, that is, the *Daštān* phase would begin. If male seeds entered the uterus before the female seed had entered, pregnancy would not occur; it was believed that the male seed would change into fat and eventually be absorbed by the woman, leading to weight gain.[11]

3. *Daštān* refers to the third phase of the menstrual period. The length of this period is not determined in the *Bun-Dahišn*.[12] A review of other ancient Persian texts such as *Vandidâd* shows that intercourse was forbidden during this period and that women were obliged to obey some traditional rules.[13]

Discussion

In modern medicine, the human ova was first discovered by Karl Ernest Von Baer in the 19th century and this important discovery helped human beings develop a better understanding of the female menstrual cycle. Finally, in 1920, the exact time of ovulation was determined by Kyusaku Ogino and Herman Knaus. Soon after that, they defined the calendar method of contraception.[14]

A review of ancient medical literature shows that some ancient nations and ethnics had some idea about the relationship between the menstrual cycle and fertility. For example, Hippocrates expressed that the best time for becoming pregnant was immediately after menstruation because it was believed

11- Ibid.
12- Ibid.
13- Darmestitir, 1917: 120, 126, 128.
14- Lolarga, 1983: 2-12.
15- King, 1998: 134-5.
16- Ibid.
17- Bullough, 2001: 244-5.

that at that time the uterus was completely empty of blood and open enough to receive semen.[15] In ancient Greece, there was a belief that over the course of time, the uterus gradually became constricted from the beginning of the menstrual cycle to day 14. So it was believed that day 14 was the most appropriate time for intercourse for those wanting to avoid pregnancy.[16] Ancient Romans, however, had different ideas. Soranos, a Roman physician in the second century, believed that periods just before and during actual menstruation were not proper times for becoming pregnant and that during those times the uterus could not accept a fetus. He actually believed that the best time for becoming pregnant was immediately after menstruation.[17]

In literature related to Saint Augustine, one of the followers of the Mani school (Manichaean faith), referred to "Sterile Periods" as periods of time in which pregnancy does not occur, despite having intercourse. It is noteworthy that in the doctrine of the Mani school, contraception was not allowed and this method was later adopted by the Catholic Church.[18] The root of this Mani school of thought dates back to the Sassanid period of ancient Persia.[19]

It is worth mentioning that *Bun-Dahišn* is not fundamentally a book about medicine; therefore, it presents only a small insight into Iranian wisdom of the time. However, the text clearly reveals that ancient Iranians recognized the menstrual cycle as a monthly cycle during which every female is fertile for a certain period of time, so called *Ābast*, because they believed that a fertilized egg was made from a combination of a male seed (gamete) and a female seed (gamete). It was also believed that during each menstrual cycle it was only during the *Ābast* period that the female seed entered into the uterus. So it was assumed that there was no female seed in the uterus before the *Ābast* phase of the cycle. Other contemporary great civilizations such as Rome and Greece held contrary views; they believed that the best time for becoming pregnant was exactly after menstruation because they thought that after menstruation the uterus was at its widest. In the *Bun-Dahišn* it is clearly stated that a woman could not become pregnant within 10 days following the end of menstruation because at that time there is no female seed in the uterus. Considering all this, it seems that ancient Iranians had more advanced knowledge than their contemporaries regarding the physiology of pregnancy.

Considering the unavailability of medical documents from

18- Ibid.

19- Drijvers, 2009.

ancient Iran, it is not feasible to conduct a more complete and accurate assessment of the knowledge of ancient medical communities in Iran regarding the physiology of pregnancy and contraception, however non-medical documents such as the *Bun-Dahišn* can illuminate some otherwise dark aspects of ancient Iranian medical wisdom. Examination of these few remaining documents shows the knowledge of ancient Iranians regarding the physiology of pregnancy which is still acceptable to some extent.

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