

'Creation after Creation in Three Veils of Darkness' The Hidden Biological Wonders in al-Qur'ān

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Abstract

This paper is an in-depth study of part of verse (6) in Sūrat al-Zumar (39) (groups).¹ This Sūrah was revealed in Makkah before Sūrat al-Mu'min (40) (the Believer) or Ghāfir (40) (The Forgiver) and after Sūrat Saba' (34) except Ayat 52-54, that are probably Madinan. It concerns the creation of man in the mother's womb (uterus) and the various unseen stages involved in the growth of the fetus, which are simplified and crystallized into one small, but unfathomable, phrase: "Three veils of darkness." How wonderfully al-Qur'ān proves that Allāh is the "Knower of the invisible and the visible!" The author would like to interpret or unravel to the extent humanly possible, Inshallah, this mystery of "three veils of darkness" and bring out the glory of Allāh as the Best Creator, the magnificence of al-Qur'ān as a great book of biological marvels and Islam, the religion or the way of life often misunderstood, and as the forerunner of scientific education.

Key words: Al-Qur'ān, creation, pregnancy, embryology.

The late Makkan Sūrat al-Zumar describes the features of the spiritual world. The surah begins with the proclamation, often found in al-Qur'ān as a reminder to those who forget, disbelieve, and become ungrateful to Him that "the revelation of the Book is from Allāh, the All-Mighty, the All-Wise"² and ends by painting a majestic picture of two groups of people marching separately on Resurrection Day. For example, the unbelievers will be "led to Hell in groups" and those who kept their

duty to and feared Allāh will be "led to Paradise (Garden) in groups."³

After enlightening mankind how Allāh created the heaven and the earth, made the day and the night to enter into one another, and subjected the sun and the moon to run an appointed term, al-Qur'ān continues to describe how He created man:

"... He created you in the wombs of your mothers creation after creation (in stages one after another) in three veils of darkness. Such is Allāh your Lord, His is the Kingdom; there is no god but He. How then are ye turned away?"¹

The usual explanation given to "the three veils of darkness" is that of amniotic cavity, uterine cavity, and pelvic cavity. Another plausible interpretation is amnion, chorion, and decidua. The meaning or the interpretation of this verse

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is definitely much deeper and wider than that.

"Indeed We have explained in detail Our revelation (Qur'ān) for people who understand."⁴

Organs of reproduction

Let us see the biological scenes that are set for pregnancy, which, in turn are associated with the phenomena of three.

A woman is said to be pregnant when the sperm (male gamete) biologically unites with the ovum (female gamete). The three organs of the female reproductive system involved in pregnancy are:⁵

1. A pair of ovaries. An ovum "hatches" out of the Graafian follicle of an ovary at each menstrual cycle, which lasts for 28 days. The ovary secretes three hormones:⁶

- a. estrogen
- b. progesterone
- c. inhibin

2. A pair of fallopian tubes. The corresponding tube transports the ovum after fertilization.

3. A uterus where the fertilized egg fixes itself or the place where implantation takes place and the embryo grows.

The three layers of the uterus are:⁵

1. Outer, serous or peritoneal layer
2. Middle, muscular or myometrial layer
3. Inner, mucosal or endometrial layer

The uterus is supported by three pairs of most important ligaments in the pelvic cavity.

1. Broad ligaments
2. Uterosacral ligaments
3. Lateral cervical (cardinal) ligaments

The three important stages in the formation of the ovum (oogenesis) and that of sperm (spermatogenesis) are:⁷

1. The first nuclear reduction division (meiosis)
2. The second nuclear equatorial division
3. The maturation process

Oogenesis takes place in three phases of a woman's life:⁷

1. Prepubertal period: oogonium or egg mother cell (diploid) becomes primary oocyte.
2. Reproductive period (post pubertal): primary oocyte becomes secondary oocyte (haploid) during ovulation.
3. During fertilization by a sperm: secondary oocyte becomes ootid and then the ovum.

However, one mother egg cell gives one ovum, whereas one mother sperm cell gives four spermatozoa. Hence, the female produces immature oocyte, but the male produces many millions of mature sperms, one of which fully enters and triggers the oocyte maturation into an ovum.

The sperm and the ovum are very unique cells. Each of our body cells contain 46 individual or 23 pairs of (diploid) chromosomes: male, 2x22+XY; and female, 2x22+XX. By means of the above meiotic divisions the egg/sperm mother cell nucleus is reduced to 23 (haploid) chromosomes

in stages. Therefore, the cells of reproduction differ from other body cells in that they have half the normal number of chromosomes, which is vital, as will be seen later. The three parts of the sperm are the head, which contains nuclear material and a cap-like structure called an acrosome; the middle piece, which contains mitochondria, which provides energy; and the tail, which propels the sperm.

Pregnancy

The events that take place in the uterus (womb) of the mother in the stage-by-stage creation and development of the fetus are simplified and stated in al-Qur'ān. These events were clearly and precisely predicted 14 centuries ago, but the details were only discovered in the last few decades by the advent of ordinary and electron microscopes.

During pregnancy, the three important physiological events that occur are fertilization, i.e. the union of sperm and ovum; implantation, i.e. the attachment to the womb; and embryonic/fetal growth.

Fertilization

During ejaculation, about 300-500 sperm, out of 200-300 millions deposited into the vagina, succeed in reaching the tubes within 30 minutes.⁸ Sperm can survive in the new environment for two to five days (mean: three). However, they remain active for about six hours. At mid-menstrual cycle, an ovum is released from the ovarian follicle and sucked into the tube. An ovum can be fertilized by a "successful" sperm about 12 hours after ovulation.

During the stay of six hours in the female genital tract, sperm are prepared for their mission in three phases:^{8,9}

1. The spermatozoa undergoes a process called capacitation where the protective glycoprotein coating is removed by undefined chemical factors and the sperm are endowed with the ability to fertilize the ovum.

2. The "successful" sperm recognizes its target and the acrosome of the sperm head releases certain enzymes, such as acrosin, that allow the head to dissolve its way and penetrate into the three coats of the "immature" ovum (oocyte):

- a. Outer corona radiata
- b. Middle zona pellucida
- c. Inner oocyte nuclear membrane

This phenomenon is called acrosomal reaction. The ovum is many times bigger than the sperm, and the latter soon finds itself dissolved in the cytoplasm of the oocyte.

3. Within the cytoplasm of the oocyte, the sperm loses its middle piece, and the tail and its nucleus swell to become the male pronucleus ready to fuse with the female counterpart.

What are the changes that take place in the oocyte when it is penetrated by sperm? Three important changes occur in the "immature" oocyte, or the ovum.^{8,9}

1. Immediately after the entry of one sperm head, the oocyte cell membrane undergoes a change called cortical reaction whereby the zona pellucida membrane becomes impermeable to other sperm.

2. The oocyte cell membrane and that of the spermatozoan fuse and the sperm nucleus enters the oocyte cytoplasm.

3. The oocyte completes its second nuclear division, and the nucleus develops into a female pronucleus.

Now, the scene is set for the male and female pronuclei to fuse. The three main results of fertilization (fusion) are:⁸

1. Restoration of diploid number of chromosome. The father and the mother each contribute 23 haploid chromosomes to result in 23 pairs or diploid number of chromosomes. Therefore the child carries half the traits of the father and half that of the mother.

2. Determination of the sex of the new individual. The sex of the child is decided by the Divine Power on the day of fertilization. The X-carrying sperm will produce a female (XX) embryo, and a Y-carrying sperm will form a male (XY) embryo.

3. The fusion of the sperm and ovum results in a single cell called zygote, which contains three components:

- a. Segmentation nucleus
- b. Cytoplasm
- c. Cell membrane

The zygote undergoes rapid mitotic divisions called cleavage once in 30 hours and produces small cells, two, four, eight, in number called blastomeres, which further divide to become a solid mass called morula. The morula travels in the tube and enters the uterus on day three;¹⁰ it contains 12-16 cells and floats freely in the uterine secretion and becomes fluid-filled blastocyst, which has three parts:

1. An outer cell mass or trophoblast, which becomes the chorion, the fetal component of the placenta.
2. An inner cell mass or embryoblast, which becomes the embryo.
3. Fluid-filled space called blastocele or blastocyst cavity.

Implantation^{8,9,10}

About six to seven days after fertilization, the blastocyst attaches itself to the body of the uterus (endometrium). The blastocyst virtually eats its way by the enzymatic secretions of the trophoblast, which dissolves the endometrium, and finally the blastocyst is completely embedded in the endometrium. How does the host (uterus) prepare the reception for the guest? After menstruation, the endometrium is in the proliferative phase and begins to develop three layers under the influence of the hormone estrogen. The layers are the superficial compact layer, the middle spongy layer, and the inner basal layer

During the postovulatory period, proliferative activity continues. If fertilization takes place, endometrial glands show increased secretory activity due to the progesterone of corpus luteum and the artery supplying the compact and the spongy layers becomes tortuous and forms a dense capillary network. Consequently, the endometrium becomes very edematous and pale and ready to receive the blastocyst. If pregnancy does not take place, the first two layers degenerate and are shed into the menstrual blood, but the basal

layer is retained for regeneration of the endometrium.

When implantation has occurred, the uterine endometrium is modified into decidua, which has three regions: the decidua basalis, the part deeper to the embryo, which becomes the maternal component of the placenta; the decidua capsularis, the superficial portion overlying the embryo; and the decidua parietalis, the remaining part lining the wall of the uterus.

Embryonic and fetal period¹¹

Embryonic life starts with fertilization, and the first week may be considered preembryonic. The first eight weeks of the developing human, however, is called the embryo stage. Afterwards is the fetal stage. The blastocyst undergoes three changes:

1. The trophoblast overlying the embryoblast differentiates into an inner layer of cytotrophoblast and an outer syncytiotrophoblast (syncytium).
2. The cells of inner cell mass (embryoblast) differentiate at first into two, and then, on the third week, three distinct cells (bilaminar, trilaminar) or primary germ discs.
3. The amniotic cavity is formed between ectodermal layer and cytotrophoblast.

The three cardinal developments during this period are:

1. Formation of the embryo - the fourth to eighth week.
2. Formation of embryonic membranes - from the third week.
3. Formation of the placenta - after the twelfth week.

During the formation of the embryo (organogenesis), the three embryonic discs develop into three primary germ layers: the ectoderm, mesoderm, and endoderm.^{11,12}

The organs formed from the three germ layers are:

1. The ectoderm, which gives rise to the epidermis of the skin, hair, nail, nervous system, receptor of the eye, nose, tongue, enamel of the teeth, etc.
2. The mesoderm, which gives rise to skeletal, smooth and cardiac muscles, bone, and connective tissues.
3. The endoderm, which forms the lining of the trachea, bronchi, and portions of urinary and reproductive systems.

The development of an organ from the three germinal layers is illustrated as follows:

1. The eye
 - a. Cornea - superficial part from the ectoderm; deeper part from mesoderm.
 - b. Retina - from neuroectoderm
 - c. Lens - superficial ectoderm
2. Skin
 - a. Epidermis - ectoderm
 - b. Dermis - mesoderm
 - c. Teeth - ectoderm and mesoderm
3. Digestive system - from endoderm; but the epithelium from the ectoderm
4. Respiratory system
 - a. Inner lining - endoderm
 - b. Connective tissue - mesoderm

The three embryonic and fetal membranes that nourish and protect the embryo are:

1. Amnion, which surrounds the embryo filled with the amniotic fluid that acts as shock absorber. This membrane ruptures during the first sage of labor and lets out the "water."

2. Chorion, which is derived from trophoblast and covers the embryo. Eventually, the chorion (villous chorion) becomes the principal fetal part of the placenta.

3. Allantois, which is a membrane containing the blood vessels that serve as a connection in the form of the umbilical cord between the mother and fetus. Mention must be made of the yolk sac, another fetal membrane that contains yolk. Unlike other species, the human embryo derives its nutrition from the endometrium (mother); therefore, the yolk sac becomes a functionless part of the umbilical cord in humans.

The placenta is an unique organ of multiple functions.¹³ It acts as the kidney, lung, liver, digestive system, and endocrine gland. It forms an indispensable "bridge" between the fetus and the mother and was built by the Supreme Creator of matchless engineering skill. The complex structure and perplexing functions of this organ are such that maternal and fetal blood do not mix, but the exchange of nutrients and gases takes place through the process of diffusion. The placenta protects the fetus from the mother's immune system, too. The placenta is formed from chorion frondosum (fetal) and decidua basalis (maternal) and connected to the fetus by an umbilical cord, which has three vessels in it: two umbilical arteries and one umbilical vein.

There are several hormones secreted by the placenta. Of the several factors involved, three hormones can be considered important in the maintenance of pregnancy. They are:¹³

1. Chorionic gonadotrophin (hCG), which starts by the second week of pregnancy by the trophoblast and enters the maternal blood causing the corpus luteum of the ovary to maintain pregnancy for about four weeks by secreting progesterone and estrogen. hCG is the basis for the early pregnancy testing (both in blood and urine).

2. Progesterone

3. Estrogen

There is a smooth and gradual transfer of "power" of endocrine support from the corpus luteum to the placenta from the sixth week of pregnancy, and by the twelfth week, the placenta takes over the hormonal functions from the ovary until delivery.

There are three shunts (bypass) in the fetoplacental blood circulation of the fetus in order to equilibrate the oxygen saturation.¹³ They are the ductus venosus, ductus arteriosus, and foramen ovale.

The mother's period of gestation is divided into three trimesters of three months each:

1. First trimester, which is the development of the embryo, placenta, and membranes. This period is most sensitive to drugs and toxins.

2. Second trimester when the differentiation of all organ systems is well advanced and almost complete.

3. Third trimester, the growth period of the fetus as well as a time for storage of nutrients.

The mother undergoes physiological changes during pregnancy under the influence of the three major hormones, estrogen, progesterone, and placental lactogen; this results in retention of water, she gains weight, and the blood volume increases by 30%.¹⁴

The duration of pregnancy is 280 days or 10 lunar months or nine calendar months plus seven days. Factors that may be involved in the initiation and steady increase in the uterine contractions are:¹⁵

1. Fetal cortisol, which inhibits maternal progesterone causing relative rise in estrogen.

2. Prostaglandin

3. Oxytocin from posterior pituitary.

The fetus is delivered in three stages:

1. Stage 1 - uterine contractions start, and the cervix dilates, resulting in the rupture of the membrane letting out the "water." The duration is variable.

2. Stage 2 - begins when the cervix is fully dilated and ends by the delivery of the fetus. The duration lasts from a few minutes to few hours

3. Stage 3 - Placenta is delivered in a few minutes.

This organ of multiple functions comes out gracefully when its services are no longer needed. If it continues to stay, it causes a lot of trouble to the mother.

Hormones influencing lactation are:¹⁵

1. Chorionic somatomammotrophin (hCS) or placental lactogen, which influences development of breast.

2. Prolactin, which maintains milk production. It is secreted by the anterior pituitary, which is controlled by the prolactin inhibitory and releasing factors (PIF, PRF), estrogen, and progesterone levels.

3. Oxytocin, which is responsible for the flow of milk from the alveoli to the mammary ducts.

Discussion

Al-Qur'an describes itself as:

"This Qur'an is not such as can be produced by other than Allāh."¹⁶

Allāh also said:

"... admonition from your Lord and a healing for the (diseases) in your hearts and for those who believe a guidance and a mercy."¹⁷

The language of the Glorious Qur'an is beautiful, eloquent, intricate, deep, and inspiring "inimitable symphony, the very sounds of which move men to tears and ecstasy." The Noble Qur'an contains several mysteries, enormous spiritual matters, and vast scientific materials, particularly the medical facts. The deeper one enters into the scientific world, the higher he scales the Greatness of Allāh and His

capabilities.

Based upon the available medical evidence, the author has given his views, suggestions, and possible interpretations of the "three veils of darkness" that fall during the physiological process of "creation after creation" in the gravid uterus. That was his sincere, honest, and profound aim. Never did he harbor any thoughts of giving the real meaning of the above verse that reveals the wonderful secrets that are discovered by modern embryology. This verse stands as towering scientific evidence of the glory of Allāh and speaks in an unparalleled language of His creative skills. No one knows al-Qur'ān fully except He and no one has the complete knowledge of al-Qur'ān to give the exact meaning of the miraculous nature of this Divine document. The language of the Glorious Book is beyond human comprehension and proof. Nevertheless, we should understand al-Qur'ān well, and efforts should be taken to explore methods to achieve this aim.

"And with Him are the keys of 'al-Ghīb' (the unknown, the invisible). None knows them but He."¹⁸

The Noble Qur'ān has proven that

"It is He Who begins the creation; then repeats it; and for Him it is most easy."¹⁹

"Oh man! What has made ye careless concerning your Lord, the most generous? Who created you, fashioned you perfectly and gave you due proportions. In whatever form He willed, He put you together."²⁰

"So blessed be Allāh, the best of Creators."²¹

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References

1. Glorious Qur'ān, Chapter 39, Verse 6.
2. Glorious Qur'ān, Chapter 39, Verse 1.
3. Glorious Qur'ān, Chapter 39, Verses 71-5.
4. Glorious Qur'ān, Chapter 6, Verse 98.
5. Tortora GJ, Anagnostakos NP: Principles of anatomy and physiology. New York: Harper & Row, 1978:646-9.
6. Bray JJ, Cragg PA, Macknight ADC, et al: Lecture notes on human physiology. London: Blackwell Scientific Publications, 1994:314-6.
7. Tortora GJ, Anagnostakos NP: Principles of anatomy and physiology. New York: Harper & Row, 1978:665-7.
8. Langman J: Medical embryology. Baltimore: William & Wilkins, 1975:23-7.
9. Moffett OF, Moffett SB, Schaug CL: Human physiology. St. Louis: Mosby Year Book, 1993:726-30.
10. Moore KL, Persaud TVN, Shlota K: Color atlas of clinical embryology. Philadelphia: WB Saunders, 1994:1-7.
11. Langman J: Medical embryology. Baltimore: William & Wilkins, 1975:38-80.
12. Moore KL, Azzindani AM: The Developing human with Islamic additions. Philadelphia: WB Saunders, 1983:36a-40a.
13. Moffett OF, Moffett SB, Schaug CL: Human physiology. St. Louis: Mosby Year Book, 1993:730-4.
14. Mohamed KB: The holy Qur'ān and human reproductive physiology. Muslim World League Journal 1998 (in Press).
15. Moffett OF, Moffett SB, Schaug CL: Human physiology. St. Louis: Mosby Year Book, 1993:742-5.
16. Glorious Qur'ān, Chapter 10, Verse 37.
17. Glorious Qur'ān, Chapter 10, Verse 57.
18. Glorious Qur'ān, Chapter 6, Verse 59.
19. Glorious Qur'ān, Chapter 30, Verse 27.
20. Glorious Qur'ān, Chapter 82, Verses 6-8.
21. Glorious Qur'ān, Chapter 23, Verse 14.