Erotismo e Sexualidade no Antigo Egipto
Erotica, Erotism and Sexuality in Ancient Egypt

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THE OLDEST PREGNANCY TEST OF HUMAN HISTORY INVENTED BY ANCIENT EGYPTIANS HAS A PRECISE SCIENTIFIC BASIS.

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Introduction

Why speaking about pregnancy test in ancient Egypt?

The Ancient Egyptians gave the world the first major civilization in history: they produce a culture that laid the foundation for many aspects of our modern life: medicine, astrology, measurement, law, writing, painting, sculpting, mathematics and so on.

As the Italian physic Lucio Russo says, the modern science doesn't start with Galileo and Newton but its origin dates back for at least two thousand years, at the end of fourth century before Christ. On our opinion the birth of modern science goes back even more, at the time of ancient Kingdom and many discoveries by ancient Egyptians have been re discovered only recently. An example is the well known pregnancy test of ancient Egyptian physicians, based on sprouting of barley seeds moistened with woman urine, a very accurate test that precedes by 4000 years the introduction of modern urine pregnancy test (1929). The aim of this paper is to show that the popular pregnancy diagnostic technique of ancient Egypt relies on solid scientific basis.

The importance of fertility and pregnancy in Ancient Egypt

The two great imperatives in the ancient world were to get married and to have children. There were two reasons why having a family was considered so necessary:

1) With no social assistance, senior residences, or pension plan, people throughout the ancient world relied on their adult children to look after them in old age. Perhaps the Ancient Egyptian euphemism for an eldest son – the staff of old age – says it all.
2) The second reason was the need in all pre-industrial societies for an increase in population. More people meant more workers. More workers meant greater wealth and a better chance of preventing conquest by aggressive neighbours.

Both these factors applied to Ancient Egypt as much as they did to all of the other ancient societies. In addition, however, Ancient Egyptians loved children. They would have wanted a family even if there were no other compelling reasons. Many family portraits attest to the love and devotion that bound together the members of a family.

In an Old Kingdom wisdom text we can read: «*Found your household and love your wife at home as is fitting. Fill her stomach with food and provide clothes for her back ... Make her heart glad, as long as you live*».

To marry and beget children may have been the duty of every right-thinking Egyptian, but it was a duty which was very much welcomed: the Egyptians were a very uxorious race.

As in any human society before and after the ancient Egyptians, the primary concern of a couple must have been its fertility.

And Ptah-hotep advised: «*Take to thyself a wife when thou art a youth, that she may give thee a son. Thou shouldest beget him for thee whilst thou art yet young, and shouldest live to see him become a man. Happy is the man who hath much people, and he is respected because of his children*».

There was enormous social pressure to get pregnant**,** and the risks associated with childbirth must have been very frightening for many, but most women really did want to be mothers. Birth itself was dangerous both to the mother and the baby. Infant mortality was high, probably around 30 percent and complications and childbed fever killed many women.

According to Madame Paule Posener the name Ankh-pa-khered was a term attributed to children whose birth had been difficult. Ankh-pa-khered means in fact «Live the child» and its great popularity shows by itself how much the delivery and first months of life were a very cumbersome period in ancient Egypt.

In ancient Egypt fertility was a primary concern at individual and social level.

Motherhood was venerated, giving a woman a much higher status in society and pregnancy was revered and considered something to be proud of.

Even if a girl wasn't married, her pregnancy was celebrated!

The ancient Egyptian priest doctors were quick to realise the power of the mind combined with the patient's faith as a significant tool to aid recovery. The *Ebers Papyrus* states: *«Magic is effective together with medicine. Medicine is effective with magic»*. Then there were a lot of deities associated with childbirth.

Hathor from the earliest times appears as a universal cow goddess, her primary function was as mother and protector of the hawk-god Heru (Horus). By time she became a protector and Mother deity for all women and children, which trait she shared with Isis from the Middle Kingdom onwards. In time these two goddesses merged into the same deity and both were then accordingly appealed to in matters of childbirth and the caring of children.

The Seven Hathors were seven cow deities, sometimes considered seven aspects of Hathert, whose task it was to predict the destiny of the newborn child. Depictions of these can be found in tombs, and in the *Book of Going Forth By Day*.

Bes was the name for a combination of several dwarf-deities protective of women and children.

Tawaret, in the figure of a pregnant hippopotamus, with a tail of a crocodile and arms and legs of a lion, is another deity connected to the protection of pregnancy

and childbirth. She too carries a knife to ward off evil. Statuettes and amulets of Tawaret were very popular among pregnant women.

Heqat, or Heqet, the frog goddess, is also associated with fertility and giving birth. Amulets and scarabs inscribed with her image were also used by pregnant women. First mentioning of Heqet in connection with childbirth occurs in the Middle Kingdom.

Meskhenet is a personification of the so called birthing bricks upon which women squatted during childbirth. She helps to protect the delivery, and further predicts the future of the infant.

Khnum was the creator of humans´ bodies on his potters wheel and breathed the life force into the child.

A detailed description of how he went about creating humans is found at the Temple at Esna.

Medical papyri contain many remedies intended to induce labor. Although there are some obstetrical prescriptions in the medical papyri physicians seem to have not nothing to do with delivery except in case of serious difficulty. In several documents describing delivery the mother is being assisted by goddess. It is quite strange that in Ancient Egyptian language does not have word for midwife.

Il would appear that women delivered their babies while kneeling directly on the ground or squatting either on birthing bricks (Dr. Josef Wegner, Associate Curator, Egyptian section of the University of Pennsylvania Museum of Archaeology and Anthropology discovered in 2001 a 3700-year-old «magical» birth brick inside the palatial residence of a Middle Kingdom mayor's house just outside Abydos, in southern Egypt. The colourfully decorated mud birth brick—the first ever found—is one of a pair that would have been used to support a woman's feet while squatting during actual childbirth; the brick's main scene shows a mother with her newborn boy, attended on either side by women and by standards capped with the head of Hathor, a cow goddess closely associated with birth and motherhood).

Ostraca from Deir-el-Medina show a «birth bower» resembling an airy tent, decorated with garlands and festive bowers, which might have been built with the purpose of a woman giving birth there.

It is believed this might have had a more symbolical than practical meaning.

In the front room of almost half of the workmen´ houses at Deir el Medina, an enclosed platform was found. This platform is believed to have served as a so called 'birth box'. It was a rectangular mud brick construction, partially enclosed but with an opening on its long side, with a couple of steps leading up to it. There were traces of plaster with painted images of Bes and Tawaret.

The diagnosis of pregnancy in Ancient Egypt

In ancient Egypt, religion and magic were at the centre of most fertility and regeneration rituals. However, observation studies and «evidence-based» medicine were current practice.

For example the absence of an expected menstruation (the old Egyptian word for menstruation was hsmn) was already taken as a sign of conception.

A Tolemaic hymn to Khnum written is his temple at Esna witnesses how ancient Egyptians knew the correlation between absence of menses and pregnancy: «*You are Khnum, the copulating male who make women pregnant and interrupts menstrual flux at the right time*».

Furthermore, the ancient Egyptians had also developed a number of tests that could be performed to indicate if a woman was fertile or not, or if was pregnant or not.

In ancient Egypt the diagnosis of pregnancy was fairly accurate.

A number of medical papyrus deals with obstetrics and gynaecology.

In *Berlin Papyrus nº 3038*, in fact we, can find a description of a test to predict if a woman will bear or will not bear. «*Wheat and spelt: let the woman water them daily her urine like dates and like sh'at seeds in two bags. If they both grow, she will bear: if the wheat grows, it will be a boy; if the spelt grows, it will be a girl. If neither grows, she will not bear.»* (Translation by Dawson)

«Means for knowing if a woman will give birth o will not give birth: (put) some barley and some wheat (into two bags of cloth) which the woman will moisten with her urine every day, equally barley and grain in the two bags. If both the barley and the wheat sprout she will give birth. If (only) the barley germinates it will be a boy, if it is the wheat which alone germinates it will be a girl. If neither germinates she will not give birth.» (Translation by G. Lefebvre).

Sauneron, in an article about birth prognosis, said:

«Ce qui n'a en revanche pas été élucidé, c'est la raison pour la quelle les Egyptiens associaient l'orge à la détermination du sexe masculin, et le blé à l0annonce d'une naissance féminine. Un indice nous est fourni par le texte démotique de théologie memphite qui à été publié. A propos de la création du flot de l'inondation et des céréales, on y lit : Il (=le dieu créateur) fit naître l'orge de l'homme, il fit naître le blé de la femme.»

For that reason Egyptians associated the barley germination with the birth of a boy and the wheat germination with the birth of a girl.

Yacob Beyene, director of Department of research and study on Arab countries at oriental Institute of Naples, reminds that still today in Ethiopia the strong tradition imposes when a female is born to lay down her on a wheat sieve and to keep in the kitchen for a while, instead when a male is born he is put on the cereal sieve and kept outside the house: this defines the respective roles: within and outside the house".

Kahun Medical Papyrus, discovered by Flinders Petrie in 1889 at el-Lahun and dated to 1825 BC to the reign of Amenemhat III, is specialised in the field of gynaecology.

The «Kahun Medical Papyrus» or «Gynaecological Papyrus» reports a method for determining a woman who will conceive from one who will not (translation by Stephen Quirke)

26. Column 3, 12-14

si3 ntt r iwi r ntt n iwr

[*ir*].*ḫr.k mrḥt m3t ḥr* [...].*ḫr.k sy*
ir gm mtyw n ḳ3bt.s ḥ3š3 ḏd.ḫr.k r.s mst pw
ir gm.k st knkn ḏd.ḫr.k r.s iw.s r mst wḏf
ir swt gm.k sy mi irn(*?*)[...]

«You should [make] fresh oil and [...] You should [...] it
If the vessels of her innards are found distended, you should say of it 'it is the birth'
If you find it limp, you should say of it 'she will give birth late',
but if you find her like ..[...]»

Carlsberg Papyrus VIII is a group of fragments from a medical treatise dating to the period around 1200 BC (19^{th}/20^{th} dynasties). The recto side of the manuscript deals with eye diseases while the verso side concerns obstetrics and there some similarity between it and both the *Kahun* and *Berlin papyri*.

This suggests that physicians associated urine as a test for pregnancy, an act that was only introduced as a reliable testing method in 1929.

The intriguing hypothesis of pre-eclampsia

The translation of *Kahun Papyrus* by Bardinet, in 1995, introduces news elements

In 1995, Bardinet, a physician Egyptologist, reviewed the old translations introducing a new concept: the urine test could be viewed not simply as a pregnancy test, but as a marker of a good outcome of the pregnancy.

«*Autre (moyen de) voir (si) une femme accouchera (de façon normale) ou (si) elle n'accouchera pas (de façon normale): orge (et) blé amidonnier, que la femme humectera au moyen de son urine, chaque jour, ainsi que des dattes et du sable, (mis) dans deux sacs (séparés). Si ensemble ils se développent (=ils se développent comme ils font ordinairement), elle accouchera (de façon normale). Si (seul) l'orge se développe (=si l'orge est le seul des deux qui se développe bien), cela signifie un enfant male. Si (seul) le blé se développe (=si le blé est le seul des deux qui se développe bien), cela signifie une fille. S'ils ne se développent pas (=si aucun des deux ne se développe correctement), elle n'accouchera pas (de façon normale).»*

JM Stevens in *Gynaecology from ancient Egypt: the papyrus Kahun – a translation of the old treatise of gynaecology that has survived from the ancient world*, builds an interesting hypothesis: it is possible to find the earliest record of eclampsia in the *Kahun papyrus*.

Can this translation advise that ancient Egypt Physicians had recognised inside the negative test a pregnancy syndrome?

Pre-eclampsia is ad enigmatic condition: it is a pregnancy-specific syndrome, recognised from antiquity as a leading cause of maternal and perinatal mortality,

diagnosed by the accompanying increased blood pressure, and proteinuria, which affects 3-5% of pregnancies. It has been termed the «disease of theories».

Pre-eclampsia also presents dyslipidaemia, increased triglycerides, decreased HDL, and an increased concentration of small dense LDL.

The hypothesis that the cause of eclampsia and pre-eclampsia is at least partly genetic is broadly suggested by its occurrence in time and space.

The earliest record of eclampsia was in the *Kahun papyrus*

Modern Medicine Pregnancy test – 1927

About four thousands years had to pass before physicians thought to use urine as a basis for pregnancy detection.

Aschheim and Zondek described a test (known as the A-Z test) which identified the presence of hCG in urine. To test for pregnancy, a woman's urine was injected into an immature rat or mouse. If the subject was not pregnant, there would be no reaction. In the case of pregnancy, the rat would show an estrous reaction (be in heat) despite its immaturity. This test implied that during pregnancy there was an increased production of a specific hormone.

Two years later this test was introduced and universally accepted.

Physiology of Human Chorionic Gonatropin (hGC)

Shortly after a woman's egg is fertilized by her male partner's sperm and is implanted in the lining or the uterus, placenta begins to form.

Within about 10 days after fertilisation the corionic celles of the developing placenta begin to secrete a new hormone, Human Chorionic Gonatropin (hCG) whose function is to maintain the early stages of pregnancy.

Because hCG is produced only by placental tissue and the hormone can be found in the blood or urine of a pregnant woman, it has become a convenient chemical test of pregnancy.

After implantation, the level of detectable hCG rises very rapidly, approximately doubling in quantity every two days until a peak is reached between the sixth and eighth week. Over the next ten or more weeks, the quantity of hCG slowly decreases. After this point, a much lower level is sustained for the duration of the pregnancy.

Its role is to maintain high progesterone production that is critical for a pregnancy, through the stimulation of ovarian corpus luteum.

hCG LEVEL DURING PREGNANCY	
3 weeks since last menstrual period	5 – 50 mlU/ml
4 weeks since last menstrual period	5 – 426 mlU/ml

5 weeks since last menstrual period	18 - 7,340 mlU/ml
6 weeks since last menstrual period	1,080 – 56,500 mlU/ml
7 – 8 weeks since last menstrual period	7,650 – 229,000 mlU/ml
9 – 12 weeks since last menstrual period	25,700 – 288,000 mlU/ml
13 – 16 weeks since last menstrual period	13,300 – 254,000 mlU/ml
17 – 24 weeks since last menstrual period	4,060 – 165,400 mlU/ml
25 – 40 weeks since last menstrual period	3,640 – 117,000 mlU/ml
NON PREGNANT	55-200 ng/ml

Modern medicine and the ancient Egyptian pregnancy test

The attitude of modern western medicine toward this old credo was very sceptical. In 1959 for example, Thomas R. Forbes, professor – Department of Anatomy and the History of Medicine – Yale University School of Medicine specified that all the predictions of sex of the unborn child are related to the superstitious and have no scientific basis.

In 1963 Ghalioungui et coll. tried to reproduce the ancient Egyptian technique testing the germination of barley and wheat after addition of urine from pregnant and non pregnant women.

Their interpretation was that the urine of pregnant women was free from normal inhibitory effect of urine on germination.

The test was positive in 28 out of 40 pregnant women. It was anyway not possible to predict the sex of the child.

The scientific basis of Ancient Egyptian Pregnancy test: discovery of the growth factor potential of hCG on plants

In 1967 Y. Leshem and B. Lunenfeld, from the Department of Botany,Bar-Ilan University, Ramat-Gan, Israel and Seed Research Department, Volcani Institute of Agriculture, Beit Dagan, Israel and Institute of Endocrinology, Tel-Hashomer Government Hospital, Israel performed an interesting experiment:

Adventitious rooting of Begonia semperflorens cv. Indian Maid and Vitis vinifera cv. Semillon stem cuttings was significantly promoted by human chorionic gonadotropin (hCG). Basal sections of hCG treated cuttings upon which promoted rooting took place had markedly less endogenous gibberellins (GA) activity than non-treated controls or apical sections of treated ones, while changes in auxin levels were not found. hCG also inhibited GA3-induced reducing sugar release from embryo less barley endosperm halves.

The conclusions drawn by these authors are that the marked and statistically significant stimulant effect of hCG on adventitious root production of cuttings of both Begonia and Vitis, stands for a direct growth factor like activity played by hCG on

plants. In other words hCG could act as a plant hormone and perform the function of an endogenous hormone.

In this respect the response elicited by hCG was similar to that previously reported by Leshem for Brassica oleracea L. var. cymosa. The promotory effect could be direct, the hCG acting as a plant hormone and performing the function of an endogenous hormone within plant tissues or, alternatively, via regulation of equilibrium between know in phyto-hormones active in 'rooting, e.g. the auxin-kinetin equilibrium reported by Skoog and Miller, and this in turn possibly regulated by GA effects on auxin levels.

Pregnant urine as plant growth promoter: Italian tradition and science.

We discovered that in some Italian regions, especially in Tuscany, farmers use to moist seeds with urine from pregnant cows to enhance plant germination.

This habit took place during the after last war where standard fertilizers were not available.

By the way interesting research done at Vegetal Pathology Institute of Perugia University by prof. Piazza shows that the urine of pregnant cow is a potent growth promoter of plant roots.

An unifying hypotesis

From these sparse findings it is plausible to conceive that the scientific basis of ancient Egyptian pregnancy test is based on the growth promoter activity played by hCG on seeds and plants.

Since only the urine of a pregnant woman contain very high amount of hGC, the germination effect obtained by moistening the seeds with urine reflects the presence of pregnancy. It is very interesting to note that urine hGC overcomes the normal inhibitory effect played by non pregnant urine due to the presence of urea and NH_3.

Experimental tests in woman and in cow.

In order to confirm the rationale behind this test we performed two "N. of 1 trials" in a pregnant woman and in a pregnant cow with Barley and wheat seeds kindly granted by Experimental Institute for Cereal Culture Research – Bergamo, Italy.

The two ladies on study were Ilaria, a nice Cow pregnant from 4 months (code No. 13981) of Farm Ca' Bianca – Loazzolo (Asti) and Roberta, a nice woman 33 years old, pregnant from two months ant the time of the test living in Sannazzaro De' Burgondi (Pavia).

Several barley and wheat seeds were put on a filter paper inside a Petri dish (see figure 1) and melted several times daily with pregnant urine and with a male urine as negative control.

Figure 1. Barley seeds on moistened filter paper

Assessment of seeds growth was performed by an independent observer not aware of the identity of the test in double blind fashion.

The assessment showed no growth with male urine and cow urine and an evident growth with woman urine (see figure 2).

Figure 2. Germination of barley seeds after melting with pregnant woman urine

Conclusions

- From the evidences described in this paper it seems quite clear that the popular pregnancy diagnostic technique of ancient Egypt relies on solid scientific basis.

- A recent review of medical papyrus seems to widen the extent of this thesis by adding a prognostic implication over the diagnostic one (pre-eclampsia syndrome).
- It is interesting to note that this last concept could explain the occasional negative results obtained with the test, described also by Ghalioungui.
- Further research is anyway warranted to confirm this fascinating assumption.

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