

Articoli/Articles

GREEK BREASTS WERE NOT JUST APHRODITE: GREEK
MEDICAL VIEWPOINTS OF THE BREASTS

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SUMMARY

The Hippocratic corpus includes several treatises dealing with gynaecological diseases where ailments of the breast appear, mainly related to gravidity and lactation; breast is mentioned in individual patients as well. Some changes in the breast along pregnancy could foretell health, disease and death of the foetus. Galen considered the design of the vessels that nurture breast and uterus, a wonderful achievement of Nature. Both of them have their origin in the same veins and are useful to eliminate excess and purify the body. When menstruation stops because of gravidity, there remains an excess in the vessels that is accumulated as milk in the upper part of the body, because the embryo pushes the vessels upwards. The genesis of milk had been earlier studied by the Hippocratics, Aristotle and Soranus. Men breasts were also considered. Paulus of Aegina explained the problem of men with gynecomastia, and explained the ways to eliminate it.

Introduction

Several Greek terms designated the breasts. *Mastós/mazós* is the common word¹. *Titthós*, “breast”, “nipple”, and *títthê, tithênê*, “wet nurse” are related to the root of the verb “to suck” (aorist *thêsthai*)². Also the very name “female” *thêlus*, and the “breast” or “nipple”, *thêlê*, come from the same verb “to suck”. We will review the importance given by the Greek physicians to the breast.

Key words: Breastfeeding - Woman milk - Breast ailments - Gynecomastia

1. Breasts: anatomy and physiology
2. Gravidity/menstruation and breasts
3. Genesis of milk and breastfeeding
4. Diseases related to breasts
5. Men and breast

1. Breasts: anatomy and physiology

The first Greek physician to treat a breast ailment was Democedes³, born in Crotona, who was taken as a slave to the Persian king Darius (reigned 521-486 BC), and cured his wife Atossa of a tumour in the breast.

Greek doctors paid special attention to the female breasts because of the enormous importance in the upbringing of children. They have described form and function, i.e. anatomy and physiology, in order to rationally understand the way breasts produce milk as soon as a baby is born. Greek doctors not just described breasts: some of them also praised their perfect position in the woman body for breastfeeding.

In the Hippocratic *corpus*, written mostly between 450 and 350 BC⁴, they distinguish on the one hand dry and hard parts of the body, which cannot attract or receive juices, and on the other, spongy and not very dense parts, such as spleen, lungs and breasts, which attract the juices around them and with them increase and harden⁵. As L. Dean-Jones underlines⁶:

The breasts were regarded as glands, and the difference in the size of male and female breasts was used as another indication of the extent to which a woman's body is looser than a man's. In both sexes they swell at puberty, but the treatise [Glands I and 16] says that breasts become prominent only in those who make milk, because man's firm flesh prevents the spongy parts of his body from swelling too much.

The spongy condition of the women's body is another feature of their inferiority to that of men.

Galen (129-216 CE)⁷ shows his enthusiasm for the placement of breasts⁸. Breasts are located in the chest, on both sides of the sternum, and thus they are a defence for the heart, protect it, and also keep the heat of the heart, and are in the place where they can gather more waste of good food. What other place is more able to take advantage of the innate heat, of which the heart is the source, than the one occupied by the breasts in human beings? Well, how's not that going to be the best position for breasts? Of the works of nature among the most admirable, for it is close to the heart and thus receives warmth. And he goes on:

When nature made the vein cava go from the liver to the diaphragm, it took it first to the heart, crossed the thorax and in the clavicles made two veins and two other arterial branches, and inserted two in each breast, so that the blood cooked as long as possible in the vessels (in order to prepare a good milk).

2. Gravity/menstruation and breasts

As for gravity and breasts, changes along pregnancy foretell health, disease and death of the foetus. Of the women who are fit to get pregnant, we are told in *Predictions* 2⁹ that small and thin women, with white or dark complexion, and with visible vessels, are more apt than large, fat, reddish or pale, and with vessels not visible. Having well-nourished flesh is bad for the older woman, but big, full breasts are good.

Among the world-known *Aphorisms* of the Hippocratic corpus, we find some referring to breasts and gravity.

In case a woman, pregnant of tweens, gets thin one of the breasts, she loses one of the children. If the right breast gets thin, she loses a boy, if the left, she loses a girl¹⁰. A pregnant woman whose breasts thin out will lose the embryo¹¹. When a woman in the seventh or eight month of the pregnancy gets the abundance of the breasts and belly lowered and her breasts are thinned and milk does not appear, the foetus is dead, or lives and is very weak¹².

The relationship between milk and menstruation is such that in case the woman not having had a pregnancy or childbirth, has milk, she is missing menstruation¹³. Even if you want to stop menstruation, apply a very large suction cup to the breasts¹⁴. Greek doctors related breastfeeding and menstruation to the extent of considering it an useful method of contraception¹⁵.

3. *Genesis of milk*

Breastfeeding is the most important aspect of breast care and the genesis of milk is meticulously explained¹⁶. In the Hippocratic *Nature of the Child* 21¹⁷ we are told that as soon as the embryo moves in the uterus, breasts become raised and the nipples swell. When the foetus compresses the uterus, the cavity of the woman, which has the fat of the food and drink, sends it to the omentum and the flesh. As fat is heated it gets sweet because of the heat of the uterus, and being squeezed, it goes to the breasts. As the vessels are alike in breast and uterus, some fat arrives to the uterus and the embryo gets it, but most of the fat arrives to the breasts as milk, and they get full and rise. When the woman gives birth, as soon as the baby sucks, the small veins of the breasts become wider and drag the fat from the cavity, distributing it to the breasts¹⁸.

The explanation of milk genesis seems to me rather logical. The Greek physicians and Aristotle kept to it as it was a sound theory. The relationship between uterus and breast, that is, menstruation/gravidity and milk, was obvious. Not knowing oxytocin and prolactin and the role of the pituitary gland and the hypothalamus, the reasoning was impeccable.

Again, in *Diseases of Women* I 73¹⁹ we learn that when the mother becomes pregnant, menstruation stops and the sweetest of the liquid obtained from the meals and drinks is directed to the breast, and the rest of the body remains less full of blood. Some women do not produce milk: they are harder and more solid, and the liquid cannot reach the breasts from the belly because the path is so constricted.

In the IV century BC Aristotle also explained the genesis of milk²⁰:

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It is clear that milk is possessed of the same nature as the secretion out of which each animal is formed: the material that supplies nourishment and the material out of which Nature forms and fashions the animal are one and the same. And this material, in the case of blooded animals, is the bloodlike liquid, since milk is concocted, not decomposed, blood.

In the natural course of events, no menstrual evacuations take place during the suckling period, nor do women conceive then; and if they do conceive, the milk dries up, because the nature of the milk is the same as that of the menstrual fluid, and Nature cannot produce a plentiful enough supply to provide both; so that if the secretion takes place in one direction it must fail in the other, unless some violence is done contrary to what is normal. And that ipso facto means something contrary to Nature, because in the case of things which admit and do not exclude the possibility of being other than they are, “normal” and “natural” are identical²¹.

He opposed to the opinion of Empedocles of Akragas (ca. 490–430 BC), who wrote that milk is something putrid: “milk is a cooked substance, and cooking is contrary to putrefaction”²². In his *History of Animals* III 20²³, Aristotle underlines that milk always has a serous part, and a consistent part that is called “cheese”. When milk is more dense, it has more cheese.

In the second century A.D., Soranus of Ephesus explained that the milk of the mother is not useful until the third day: it is thick, with too much cheese, and therefore indigestible, unassimilable, produced by a body that has suffered and has been considerably disturbed: slimming, weakness, pallor and heavy blood loss, fever most of the times. At the beginning it is convenient to use honey, by itself or mixed with goat milk. After that, the mother’s milk is the best. When the mother is not apt to breastfeeding, it is better to find a wet nurse²⁴. Such nurse has not to be below twenty years nor above forty, having been pregnant two or three times, healthy, of good constitution, good colour, with breasts of good size, spongy and without wrinkles, with nipples neither big nor small, neither very compact nor very spongy; a prudent person, sympathetic, not irascible, Greek, neat ...²⁵

Soranus advised to check the milk thoroughly. It has to be white: the livid or greenish is damaged, the chalky is thick and hard to digest, the reddish or brown is unconcocted ... When milk starts to be bad, it is necessary to find the wet-nurse's disease and treat her with the adequate regimen²⁶.

One and the same is the nature of menstruation and milk, and the common source are the veins, claimed Galen²⁷. Babies receive the most appropriate food that is not just food, but also provides them with natural capacities. And if you put the nipple in the child's mouth, he sucks immediately and with pleasure, and if he was crying he immediately stops crying and is at ease. ... Milk certainly is the best food for the baby because it contains precisely what the child needs²⁸.

Why is the milk white?, asks Galen. Since every part assimilates the food to itself, the tunics of the vessels in which the blood is delayed, being white, alter the blood and make it white²⁹. What is it to do when milk is not enough?

*Examine the blood, because it is less abundant than convenient or just bad. If it is scarce, the whole diet needs to be moist and hot. When it is bad, it could be bilious: you have to purge. It could be phlegmatic: it is necessary to supply warming drugs, but not to dry, and administer some natural things: rocket (*eruca sativa*), fennel (*foeniculum vulgare*) and dill (*anethum graveolens*); they have to be green and wet. Well, if they are dry, they dry and heat more than necessary³⁰.*

4. Diseases related to the breasts

Ann Ellis Hanson wrote at the beginning of her "The Logic of the Gynaecological Prescriptions":

Medicaments and therapies are omnipresent in the gynaecological treatises of the Hippocratic Corpus, for the writers of the gynaecology not only interspersed their narratives of morbid, female ail-

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*ments with means of treatment, but they concluded their treatises with collections of additional recipes*³¹.

Greek doctors often commented the symptoms and treatment of diseases related with breasts. Sometimes breasts symptoms announce other illnesses, as is the case in *Epidemics* 2³²: “Blood rushes to the nipples of people who are prone to go crazy”. Or this one: “When nipples and areola are greenish-yellow, uterus is sick”³³.

By all means most breasts problems happened to women. Galen offers an explanation of cancerous tumours in the woman’s breasts³⁴. Due to its relevance I include the passage. They happen when women are no longer purged by the natural evacuation (i.e. menstruation)³⁵.

*Whenever this occurs as it should, the woman continues to be entirely disease free. All such tumours contrary to nature have their genesis from a melancholic superfluity*³⁶, which I have also spoken about in the treatise *On the Natural Faculties*, showing this to be generated in the liver in relation to the formation of blood, analogous to the lees in wine, and is to be purged away through the spleen. From such a humour it is naturally produced. Therefore, when the natural *krasis*³⁷ of the organism generates a small amount of the humour and the diet is as it should be, the spleen effectively draws to itself what is generated and none of these superfluities are collected in the veins. However, when the opposite situation exists, much is collected in the veins and brings about the diseases.

Greek physicians have a holistic approach to disease. When something is wrong in an organ, the cause has to be found in an imbalance of the whole body. Even if something abnormal happens on the skin-external injury excepted-, the body is to blame.

Galen goes on:

*We have often seen in the breasts a tumour exactly like a crab. Just as that animal has feet on either side of its body, so too in this affection the veins of the unnatural swelling are stretched out on either side, creating a form similar to a crab*³⁸. When this affection is just beginning, we often cure it. When it has become swollen to a significant size, no one will cure it without

surgery. The aim of all surgery is to excise the tumour contrary to nature, cutting around the whole mass circumferentially to where it is adjacent to what is in accord with nature. Due to the magnitude of the vessels, particularly when these happen to be arteries and there is an immediate danger of haemorrhage, when you cut these off with ligatures, sympathetic affections follow. And if we elect beforehand to cauterize the roots of the affection itself, there is no little danger in doing this, whenever the cauterization occurs near important parts. But when this affection is beginning to be generated, we will often cure it, as I said, and especially when the melancholic humour is obviously not very thick, for this readily yields to the purging medications by which the treatment is carried out. It is clear that the medications given must be purgative of the black humours, and we must administer them repeatedly until the part returns completely to an accord with nature and the diet is euchymous³⁹.

In this affection the aforementioned purifications are beneficial. If, however, the factors of age and capacity permit, carry out phlebotomy beforehand. Neither in the case of cancerous swellings nor in elephantiasis is it inappropriate to phlebotomize, if nothing prevents this, and next to purge. If the patients are women, activate the menstrual flow in them, if they are not yet fifty, obviously. Place the juice of sleepy nightshade⁴⁰ on the affected part, for this is the best medication for such affections. If the person being treated doesn't want a moist medication to be applied in this way, and particularly if he/she is compelled to leave home to carry out his customary activities, you must look to the medication made from pompholyx⁴¹, which I use, as you know, in the ulcerated cancers. If this is not available, use my medication made with copper. In terms of diet, one must use the juice of ptisane and the whey of milk, garden herbs, orach, blite, and when they are in season one must use the Colocynthis. Also one must use fish from the rocks and all birds except those from the marshes.

An unusual ailment is breast trichiasis, and the Hippocratic *Diseases of Women* includes a medical treatment of it⁴². When a woman gets hair on her breasts, cook in water and oil *poterium spinosum* or blackberry grain and put it as a poultice. You can also put chard leaves. Then sew some kind of cups for the breasts in pieces of cloth and attach them. If there is oozing, it is best to make an incision: make some lint with wet-in-fat wool and add it to the cups. Then remove this, mix lentil cooked with barley flour and put them in poultice.

5. Men and breasts

From time to time patients are men. In the Hippocratic *Epidemics*⁴³ a clinical history mentions a man from Chalcedon who had a pain of rupture in the right breast, and expectorated greenish-yellow sputum; sweat started on the seventh day, crisis happened on the fourteenth, on the fortieth he had a swelling next the two ears. He looked like he was going to have empyema, but he did not have it.

Paulus of Aegina studied the problem of men with gynecomastia⁴⁴, and explained the way to eliminate it⁴⁵. Boys' breasts also swell a little at puberty, but most of them get off. Some, however, do not get free of them because fat is deposited. To avoid this opprobrium, you can practice surgery, making a cut in the form of a crescent in the lower part of the chest, and, separating the skin, remove the fat and then join it again with seams. If the fat was too much, and the breasts were going down, in the upper part we would make two crescent cuts joining them at the end so that the smaller one is covered by the larger one. We remove the fat that is in between, and then proceed to sew.

6. Conclusion

In Greek medicine, disease and death have a natural explanation, as conception and birth do. When the genesis of a disease can be advanced, such a disease is no longer a punishment, or a "wrong" quality of a group of people. It is just a common hazard as natural as lightning or a rainbow. A patient would not be considered different or even mad for complaining of something that does not exist, because it has not (yet) been described. Fear is once again averted⁴⁶.

In spite of the common opinion of Greek scientists and physicians of woman's inferiority, they considered women essential for the production and feeding of babies. Greek physicians researched breasts nature, their function and their diseases, explained the genesis of milk and its cause, noted the course of some pathologies that they

did not understand, in the hope that they would support other doctors who could advance in the knowledge of the human being. They designed treatments, but warned that certain conditions had no cure. They explained medicine without involving gods, but they did not attack them. In short, they acknowledged their limits as men no less than their capacity as men.

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2. Beekes R, *Etymological Dictionary of Greek*. 2 vols. Leiden: Brill; 2010, s.v.
3. *Hdt.*, 3.133.
4. See Jouanna J, *Hippocrate*. Paris: Fayard; 1992 for dates and contents of the Hippocratic corpus.
5. See *Ancient Medicine* 22: 1.628-630 Littré. Unless otherwise stated, translations are mine.
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8. *Gal.*, *De usu part.*, 7.22: 3.602-608 Kühn.
9. *Hippoc.*, *Prog.*, 24: 9.54 Littré.
10. *Hippoc.*, *Aph.*, 5.38: 4.544 Littré.
11. *Hippoc.*, *Aph.*, 5.53: 4.550 Littré.
12. *Hippoc.*, *Mul.*, I 27: 8.70 Littré.
13. *Hippoc.*, *Aph.*, 5, 39: 4.544 Littré.
14. *Hippoc.*, *Aph.*, 5.50: 4.551 Littré. and *Epid.* 2, 6.16: 5.136 Littré.
15. See King H, *Hippocrates' Woman. Reading the Female Body in Ancient Greece*. London-New York: Routledge; 1998. pp. 144-145.

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16. See Auberger J, *Le lait des Grecs: boisson divine ou barbare?* Dialogues d'histoire ancienne 2001;27:131-157, explains the use of milk by the Greeks, through myth, literature and medicine: she deals with medicine in pp. 149-154. See as well Pedrucci G, *Sangue mestruale e latte materno: riflessioni e nuove proposte. Intorno all'allattamento nella Grecia antica.* Gesnerus 2013;70:260-291.
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19. Hippoc., Mul., 8.152-154 Littré.
20. Arist., Gen. an., IV 8: 777a=472-473 Peck-Loeb. Translations from Aristotle are taken from Peck.
21. Arist., Gen. an., IV 8: 777a Bekker = 472-474 Peck-Loeb.
22. Arist., Gen. an., IV 8: 777a Bekker = 472 Peck-Loeb
23. Arist., Hist. an., 521b Bekker = 224-225 Peck-Loeb
24. Sor., Gyn., 2.18: CMG IV 64-65 Ilberg. See as well Burguière P, Gourevich D, Malinas Y (eds), *Soranos d'Ephèse. Tome II*, Paris: Les Belles Lettres; 1990, notes 139-141. For the nurse in Greece see Vilatte S, *La nourrice grecque. Une question d'histoire sociale et religieuse.* AC 1991;40:6-28.
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28. Gal., *De sanitate tuenda*, 1.7: 6.36 Kühn.
29. Gal., *De usu part.*, 14.10: 4.185 Kühn.
30. Gal., *De simpl. med. temp. et fac.*, 5.21: 11.771-772 K.
31. See Hanson AE, *The logic of the gynecological prescriptions.* In: López Férrez JA (ed.), *Tratados hipocráticos: (estudios acerca de su contenido, forma y influencia)*, Actas del VII^e colloque international hippocratique (Madrid, 24-29 de septiembre de 1990). Madrid: UNED; 1992. p. 235.
32. Hippoc., Epid., 6.32: 5.138 Littré.

33. Hippoc., Epid., 6. 5.11: 5.318 Littré.
34. Gal., Ad Glauc. de med. Meth., II 12: 11.139-143 Kühn = 548-558 Johnston (Loeb 523). Translation by Johnston.
35. “He [Galen] indicates in several treatises the humour that, imbalanced and displaced, produces the disease (he refers to such humour as an excess or superfluity): yellow bile for erysipelas and herpes, black bile for anthrax, gangraina, elephas, phagedena and cancer, blood for phlegmonê, and phlegm for oidêma. Most of them are ulcers or could present them: anthrax, gangraina, herpes, phlegmonê, phagedena, erysipelas, karkinos, all very different to one another”. See Garcia Novo E, Galen. On the Anomalous Dyskrasia. Editio maior. Berlin: Logos Verlag; 2012. p. 178.
36. i.e. an excess of black bile. See now Stewart KA, Galen’s Theory of Black Bile. Leiden: Brill; 2018.
37. “Balance of humours”. For the concept, see Garcia Novo E, Galen. On the Anomalous Dyskrasia. Editio maior. Berlin: Logos Verlag; 2012. pp.114-118.
38. Hence the name “cancer” that means “crab”.
39. i.e. productive of healthy humours.
40. *Withania somnifera*.
41. It could mean a remedy made of zinc oxide, described in Dioscorides 5.75. Cf. Wellmann M, Pedanii Dioscuridis Anazarbei de materia medica libri quinque. 3 vols. Berlin: Weidmann; 1907-1914 (repr. 1958); Ilberg J, Sorani Gynaeciorum Libri IV. CMG IV. Leipzig-Berlin: Akademie Verlag; 1927.
42. Hippoc., Mul., II 186: 8.366-368 Littré.
43. Hippoc., Epid., 4.3: 5.144-146 Littré.
44. See Tsoucalas G, Sgantzos M, Paul of Aegina (ca 625-690 AD), Reconstructing Male Gynecomastia. *Surgical Innovation* 2017;24:399-400. The influence on Arab surgery is reviewed by Chavoushi SH, Ghabili K, Kazemi A, Aslanabadi A, Babapour S, Ahmedli R, Golzari SE, Surgery for Gynecomastia in the Islamic Golden Age: Al-Tasrif of Al-Zahrawi (936–1013 AD). *ISRN Surg.* 2012 (2012: 934965).
45. Paul. Aegin., Epit. med., 6.46 (CMG IX 2, 86.22- 87.8 Ilberg)
46. See Garcia Novo E, Confronting Disease and Death: the day-to-day contest of the Hippocratic physician. In: Müller CW, Brockmann Chr, (eds). *Ärzte und ihre Interpreten: Medizinische Fachtexte der Antike als Forschungsgegenstand der Klassischen Philologie*. Leipzig: Teubner; 2007. p. 229.

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