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ANCIENT CASES OF CONGENITAL DISORDERS AND THEIR SOCIAL CAUSES

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Abstract: More than 79 cases of children born with congenital defects are known from Greek and Roman literature. Although it is extremely difficult if not impossible to identify a single potential cause for it, attempts at explanation are already found in ancient writers. With the help of modern teratological science many teratogenous causes can partly be identified. Some of the most probable factors among these were the same as today: malnutrition, viruses, alcohol, vitamin deficiencies etc., but lead poisoning has to be taken also into account as a principal cause.

Keywords: Congenital disorder, malformation, lead poisoning, teratogens, teratogenous factors.

Introduction

Congenital defects are and were looked at as something extraordinary during history. Major abnormalities are apparent and they occur frequently enough (cca. 1,5-2,5% of the general population varying with the type of malformation and also from country to country) to be observable in everyday's life.¹ Accordingly, the description of congenital abnormalities appears as a kind of curiosity in the literature, as well. At first glance the topic of congenital deformities belongs exclusively to the science of medicine, however a deeper investigation of the related statistics and a root cause analysis indicate the socio-cultural and economic background as principal factors, as well.

This way, maybe surprisingly, a scientific investigation of exotic and somewhat marginal topics, like the analysis of congenital diseases in the ancient world reveals the underlying complex system of interactions between human beings and nature, the complex influence of culture, habits and economy. Newborns suffering of congenital abnormalities were treated in ancient times as monsters, something out of the range of normal and acceptable human life better to be kept secret. Deformed newborns were looked at more as strange animals, like human beings; and they were granted with no or little survival chance in order to eliminate the shame on the family.

¹ R. O'Rehilly – F. Müller; Human Embryology & Teratology. New York 2001, 115.

Description of deformed newborns was already a topic for the ancient Greek and Roman authors. More than 79 such descriptions are known today completely or to some extent, however even the modern science is unable to produce an approximate estimation on the total numbers due to the lack of exact data by Cassius Dio.² The moderate amount of case descriptions does not facilitate drawing any statistical consequences, as only a handful of ancient authors reported on it.

Medical background

The origins of congenital defects were largely unknown until today, and their causes remain frequently unidentified. Such defects originate in disorders during the process of ontogenesis, the process of development leading from the fertilized oocyte to a mature organism. Despite the fact that modern medicine identified a huge variety of potential causes of congenital defects, it is extremely difficult if not impossible to diagnose exactly the origin of congenital deformities in an actual case, because all malformations are in a sense multifactorial and also because the four main factors (the dosage of the teratogen, the developmental phase, the genotype of the mother and the foetus and the environmental factors) cause different problems in various stages of the pregnancy and they can also influence each other's effect.³

Teratology is the branch of medical science studying abnormal foetal development leading to congenital malformations. The word "teratology" is a derivative of the ancient Greek word of *teras* (monster), used already that time in the context of medicine to refer to a grossly malformed foetus or newborn. The pathogenic factors constituting the potential roots of deformities can be grouped into three main categories. The first part of these cases having genetic origins (i.e. malformations originating in a defective gene of a parent expected to cause 25% of all cases) remain without a detailed explanation on the root causes. The second category is formed by chromosome defects corresponding to a share of 15-28% of all congenital defects. The most widely known representative of this category is Down-syndrome.

The third category consists of teratogenous causes, like the illnesses of the mother, different chemicals, drugs, environmental impacts and nutritional defi-

² For a summary of all cases mentioned by e.g Pliny, Plutarch and Phlegon see: A. Allély, Les enfants malformés et considérés comme prodigia à Rome et en Italie sous la République. In: *Revue des Études Anciennes* 105 (2003) 139.

³ R. O'Rehilly – F. Müller, op. cit. (note 1), 117-121.

ciencies. Actually, modern medicine knows more than 2000 such factors, which cause in total approximately 10% of all congenital deformity cases.⁴ The root causes of the remaining cases (totalling 37-50% of birth defects) remain completely unidentified. even in modern times.

Assumptions for the reconstruction

If we look at the phenomenon of congenital diseases from the point of view of biology, all potential human factors vanish behind the statistics as a simple statistical entry. However, a deeper analysis of the human factors allows the discovery of the interdependencies between the social and biological influences affecting the individuals.

Genetic and chromosome defects

It can be assumed that the relative frequency of the occurrence of cases related to genetic and chromosome defects were probably of the same frequency in ancient times (or due to the lack of medical screening slightly higher) as nowadays, since they are predominantly phenomena related to human biology.

Modern statistics on the geographical distribution of genetic and chromosome defects indicate no major deviances despite huge differences in the level of economy, culture and habits, with the exception of some singular locations having extreme environmental risks (like areas near to nuclear or chemical catastrophes in modern times) or risks originating in specific religion or culture rules (like preference of marriage between relatives).

This independence justifies the assumption, that this category is independent of the social factors, and accordingly thus modern time statistics approximate properly that of the ancient world.

Teratogenous factors

However, the estimation of change of teratogenous factors over time is an extremely difficult problem. At first glance, there are several potentially important, but contradictory factors. On the one hand, an embryo in ancient times

⁴ *R. Garland*, *The eye of the beholder: deformity and disability in the Greek-Roman World*. Ithaca 1995, 144.

was not exposed to such dangerous environmental impacts like radiation or chemicals originating in an industrialized environment; on the other hand poor quality of drinking water, pollution due to unawareness of dangers and similar impacts (discussed below in detail) endangered it to at least a similar extent, as the embryos today.⁵

This way the analysis of teratogenous factors has to assess both categories of factors originating in nature and risk factors related to human activities. Moreover, these categories cannot be analysed *per se* in isolation, as humans adapt their behaviour, thus implicitly their risk exposure to their environments. Thus, the category of teratogenous factors is a historical one, showing a strong dependence on the social surroundings.

Information sources

The investigation of the potential causes of congenital defects in the ancient era can rely on two fundamental information sources: a comprehensive, but subjective and frequently distorted one is the opinion of the ancient writers about the origins of deformities,⁶ while the objective one, based frequently only on indirect evidence, is the reconstructive overview on the teratogenous factors (materials, illnesses, environmental influences) in the ancient ages, similar to those today.

In modern times, many questions are still open and are subject of heavy scientific discussions despite the discovery of numerous new facts and findings. At the same time many misinterpretations about them circulate in the public arena.⁷

Case descriptions in the ancient literature

Aristotle was the ancient writer creating probably the most timeless related works. He was well acquainted with the different kinds of malformation and he described frequently phenomena related to teratology in detail, primarily in the fourth book of his work entitled *De generatione animalium*. His primary scope

⁵ R. Garland, op. cit. (note 4), 144.

⁶ For a summary of ancient theories: C. Bien, Missbildung. In: K.-H. Leven, Antike Medizin. Ein Lexikon. München 2005, 620–621, of which I discuss more theories hereafter.

⁷ For the theory of teratology see: J. Warkany, Teratology of the past. In: J. Warkany, Congenital malformations. Chicago 1971.

of congenital deformities covers disproportional human bodies, extra or missing limbs, duplicated or irregularly located organs, hypospadias (malformed urethra in the male), imperforate anus (missing anal opening) and dwarfism.⁸

In his description he gave basic definitions:

„For, following what has been said, it remains to give the reason for such monsters. If the movements imparted by the semen are resolved and the material contributed by the mother is not controlled by them, at last there remains the most general substratum, that is to say the animal. Then people say that the child has the head of a ram or a bull, and so on with other animals, as that a calf has the head of a child or a sheep that of an ox. All these monsters result from the causes stated above... That, however, it is impossible for such a monstrosity to come into existence – I mean one animal in another – is shown by the great difference in the period of gestation between man, sheep, dog, and ox, it being impossible for each to be developed except in its proper time... This is the description of some of the monsters talked about; others are such because certain parts of their form are multiplied so that they are born with many feet or many heads.”⁹

This was the most comprehensive and detailed work related to congenital defects until the 17th century, which indicates on the one hand the accuracy and faithfulness of his writing at the phenomenological level, and the extreme slow progress of the science related to causal genesis. In contrary to his predecessors, Aristotle tried to find multiple alternative and specific explanations for the particular types of congenital defects. Interestingly, he refers to as monsters (*teras*) all people dissimilar to their parents in the same way as Hesiod (*Works and Days* 235).¹⁰

No substantial discoveries were made in the ancient ages with the exception of Aristotle, despite the frequent addressing of the topic in the ancient literature. For instance, 1–2nd century writer Soran¹¹ had the same misbelief as Plato¹² (5–4 c. BC), that the limbs of a newborn have to be fixed with the help of a tight bandage in order to avoid their deformation due to motion.¹³

Ancient hypotheses on the causes of congenital deformities

Already the ancients identified some risk factors properly. For instance, they were already aware of the importance of inheritance, especially the proneness to illnesses and congenital deformities of the children of people suffering a

⁸ R. Garland discussed in detail Aristotle's writings about teratology (op. cit. [note 4], 152-157).

⁹ Aristotle, *De generatione animalium* 769b-770a. (transl. by A. Platt).

¹⁰ Ibid. 767b 5-7.

¹¹ Soranus, *Gynaecology* 2, 14.

¹² Plato, *Laws* 7, 789e.

¹³ R. Garland, op. cit. (note 4), 145-146.

poor health. Plutarch describes the displeasure of the Spartans upon the decision of their king Archidamus of a short stature marrying a similarly puny wife in order to avoid “*procreating tiny kings instead of ordinary ones.*”¹⁴

Similarly, the author argues about the evolution of the tribe of long heads in the collections attributed to Hippocrates in the following way:

*„for the semen comes from all parts of the body, sound from the sound parts, and unhealthy from the unhealthy parts. If, then, children with bald heads are born to parents with bald heads; and children with blue eyes to parents who have blue eyes; and if the children of parents having distorted eyes squint also for the most part; and if the same may be said of other forms of the body, what is to prevent it from happening that a child with a long head should be produced by a parent having a long head?”*¹⁵

Pliny shares the same opinion:

*„The following facts are well known: sound parents may produce deformed children and deformed parents may produce sound children or children with the same deformity as themselves. Birthmarks, moles, and even scars can reappear in descendants, a tattoo sometimes recurring up to the fourth generation among the Dacians.”*¹⁶

At the same time, Hippocrates realized correctly, that bleeding during pregnancy, an improper shape or injuries of the uterus or of the pelvis may lead to deformities in the newborn as well. He wrote already at that time about the dangers of abortion frequently carried out by an unskilled person or the mother herself, as such interventions may lead to permanent damage to the uterus, which seriously endangers the health of a would-be embryo. While in other cases the abortion was not carried out to its very end, but the embryo was severely injured leading to a deformed newborn as a consequence of the incomplete intervention. He enlists several other risk factors in Chapter 25 of his book on female illnesses (*De mulierum affectibus*), like accidents affecting the mother, maternal dietary insufficiency or frequent unconsciousness potentially leading to deformations in the embryos.

The ancient assumption about the dominating influence of the external impacts affecting the sperm and the mother in the instance of conception was a long lasting one. Basically, we can recognize a predecessor of the research of chromosome faults in the writings exposing the importance of the age of the fa-

¹⁴ Plutarch, *Moralia*. 1D 1-5. (transl. by D. Patarcza).

¹⁵ Corpus Hippocraticum, *De aëre, aquis et locis* 14. (transl. by F. Adams). See also Aristotle, *Historia animalium* 7, 585b 30-7 T.

¹⁶ Pliny, *Naturalis historia* 7, 10, 50. (transl. by M. Beagon) Aristotle, also wrote about the importance of inheritance, e.g. *Historia animalium* 7, 585b 30-7 T; *De generatione animalium* 1, 721b 32-34; *Politics* 1, 1254b 27-31.

ther at the instance of conception:

„It is extremely bad for the children when the father is too young; for in all animals whatsoever the parts of the young are imperfect, and are more likely to be productive of females than males, and diminutive also in size; the same thing of course necessarily holds true in men; as a proof of this you may see in those cities where the men and women usually marry very young, the people in general are very small and ill framed.”¹⁷

A heavy impact of the correlation of visual impressions affecting a woman and the exterior appearance of her future baby was a widespread belief most probably in strong correlation with the influence from imitative magic. Empedocles assumed that progeny can be modified by the statues and paintings that the mother gazes upon during her pregnancy thus the phantasies viewed by the woman during copulation form the foetus. According to him it happened frequently, that a woman who fell in love with a sculpture or a painting gave birth to a baby similar to them.¹⁸ This belief has oriental origins and was accepted for centuries as fundamental.¹⁹ Similar folk beliefs are still very frequent all over the world. The idea of the influence of visual impressions on the baby to be born appears in the Old Testament as well. Jacob used a gimmick based exactly on this to attain a part of the cattle of Laban.²⁰

Soran formulated the belief in the following fashion:

„What is one to say concerning the fact that various states of the soul also produce certain changes in the mould of the fetus? For instance, some women, seeing monkeys during intercourse, have borne children resembling monkeys. The tyrant of the Cyprians who was misshapen, compelled his wife to look at beautiful statues during intercourse and became the father of well-shaped children; and horse-breeders, during covering, place noble horses in front of the mares.”²¹

¹⁷ Aristotle, *Politics* 7, 1335a 11-17. (transl. by W. Ellis).

¹⁸ Empedocles, *DK* 31A 81, 20-22.

¹⁹ It was Jan Palfyn Dutch anatomist and surgeon (early 18th c.) who questioned this superstition. (C. Pinto-Correia, *The ovary of Eve. Egg and sperm and preformation*. Chicago 1998, 137-138).

²⁰ *Gen.* 30: 26-42.

²¹ Soranus, *Gynaecology* 1, 39. (transl. O. Temkin). The same superstition appears in Heliodorus' *Aethiopica* 10, 14, 7: 'How is it possible in reason that we being both Ethiopians should beget a white child?' 'As touching your question of her colour, the writing on he band answereth you, for Persina there allows that in her conception she drew somewhat from the figure of Andromeda, by looking upon her when you had to do with her. If you desire to be fully satisfied herein, look yourself also now, and you will find that Andromeda is as well expressed in the maid a sin the picture without and difference.' (transl. by T. Underdowne)

This concept held up until the 20th century. See also M. S. Tye, *Prenatal Influences*. The American Journal of Nursing, Vol. 7, No. 5 (Feb. 1907), 362-367.

According to another ancient hypothesis, as stated in the part of *Corpus Hippocraticum* entitled *de semine*, deformities can be provoked by blows to the uterus, or by its abnormal shape.²²

Modern hypotheses

The assessment of potential teratogenous effects is similarly important when examining the ancient cases of congenital deformities. Some teratogenous factors, like drugs (medicinal herbs and fungi in ancient times), alcohol,²³ viruses (cytomegalovirus, rubella, herpes, varicella, toxoplasmosis spread with raw meat or cat excrement) and insufficient nutrition are all potential causes of such deformities.²⁴ For instance, the virus of cytomegalia may cause a low birth weight, microcephaly, brain damage and other disorders of the nervous system.²⁵

In other cases, metabolic imbalance in the mother, like diabetes, folic acid or iodine deficiency may result in health problems in the newborn. Even a single fever (hyperthermia) may cause disturbance during the closure of the neural tube, microphthalmia and defective growth.²⁶ Naturally, a posterior identification of the exact root cause out of the many potential ones is practically impossible when looking at a particular ancient medical case of congenital disorder. Moreover, even the viruses and correspondingly the symptoms of the illnesses underwent mutations during the 2–3 millennia passed since then.²⁷

It has to be taken into account that the susceptibility of the mother to teratogenous influences depends on her individual overall health state, as well. The most important factors influencing the health of the foetus are: age and weight of the mother, state of her uterus, hormonal balance. Due to some still unknown reasons, the risk of a congenital deformity is the highest if the mother is younger than 20 or older than 40 years.

Malnutrition of the mother may increase the damage caused by teratogenous factors. A similar increase in risk can be observed, if the mother suffers from

²² *Corpus Hippocraticum, de semine* 10.

²³ Soran emphasized that a breastfeeding woman should not consume alcohol (*Gynaecology* 2, 19, 1), although it has to be pointed out that it is not sure if he noticed that women consuming alcohol during pregnancy gave birth to babies having prenatal or postnatal growth retardation, microcephaly, mental deficiency etc. *R. Garland* op. cit. (note 4), 151.

²⁴ I do not mention *bacteria* (syphilis, listeriosis, brucellosis etc.) because these cause foetopathia in most of the cases. *R. O'Rehilly – F. Müller*, op. cit. (note 1), 122.

²⁵ *M. Cole – S. Cole – C. Lightfoot*, *The development of children*. New York 2009, 94.

²⁶ *R. O'Rehilly – F. Müller*, op. cit. (note 1), 123.

²⁷ *V. Nutton*, *Ancient Medicine*. London 2004, 22–23.

some specific illnesses, like diabetes, toxæmia, metabolism disorders, liver insufficiency or other serious diseases frequently occurring during and caused partly by pregnancy.²⁸ It has to be taken into account in a similarly important manner that the potential consequences depend on the phase of the acuteness of the illness related to the beginning of the pregnancy. The impacts of a particular illness may essentially differ, if it affects an embryo (first three months of the pregnancy) or a foetus (the period ranging from the fourth month until the birth).

Despite the fact that the factors and direct origins of malformed babies are of a human-biology related nature, these have once again a strong historical context. For instance, pregnancy of mothers suffering from malnutrition during the first three months indicates a serious increase in the vulnerability of the central nervous system of the newborns. At the same time, an extremely bad socio-economic background may expose a pregnant woman simultaneously to nutrition insufficiency and to multiple and correlated risk factors. In general, it is a difficult or even impossible task to differentiate between the impacts of malnutrition and other risk factors, like poor or missing hygiene when examining congenital deformities in newborns of inhabitants of slums.²⁹

The frequency of occurrence and severity of such risks was highly determined in the ancient era by natural factors like meteorological circumstances out of the reach of any human control or compensation possibility at that time. The quantity, availability and price of agricultural products for the average population changed year to year depending on the amount of moisture, as watering was limited. Fresh vegetables and fruits became unavailable or unaffordable by being too expensive in a dry year or during winter for a large share of the population.³⁰ Accordingly, a pregnant woman faced a drastically increased risk of giving birth to a child suffering from a severe illness if the first three months of her pregnancy fell during a period of famine or winter time.

Another group of factors is formed by the potential illnesses of the mother prior to the pregnancy, which has to be taken into account in the analysis of congenital defects. Life expectancy in the ancient era was definitely less than nowadays. It reached only 20-30 years on average, a value similar to that in the worst regions of the modern third world.

However, the environment was a principal factor in life expectancy. The population of marshlands was most probably in the worse situation due to exposure to the risk of malaria; at the other end, grandfathers, moreover great-

²⁸ *M. Cole – S. Cole – C. Lightfoot*, op. cit. (note 25), 101-103.

²⁹ *Ibid.* 105-106.

³⁰ *V. Nutton*, op. cit. (note 27), 21.

grandfathers were living in Tifernum, a city in Umbria.³¹ It may sound surprising, but the modern idea of sustainable living, thus the harmonization of human living with the forces of nature dates back to ancient times. For instance, they already realized the importance of a proper urban architecture in the assurance of a healthy living environment. The *Corpus Hippocraticum*³² describes the beneficial impacts of an appropriate geographical allocation of cities, of constructing wide streets, moreover the importance of the the harmonization of their orientation with the dominant wind direction.³³

Unawareness on the consequences of man-nature interaction was one of the main sources of overall health problems in ancient times. Several professions exposed to natural dangers severely endangered the health of the workers. Galen describes the everyday's life of fishermen in details, including, that they are endangered by bites and electroshocks of electric rays. Many professional copyists gradually lost their eyesight of the lifelong writing over reflective surfaces. The leading cause of mortality of lead and silver miners was heavy metal toxicity.³⁴

These factors seem to have only a little relevance from the point of view of congenital deformities (as women obviously did not practice these professions at all, only some fathers), although according to latest research some teratogens like alcohol or lead may penetrate the blood-testis barrier and thus cause birth defects through paternal inheritance.³⁵ Yet, unawareness originating in the ill-developedness of natural sciences or ignorance of environmental health risk factors must have applied to pregnant women as well.

Accordingly, mortality rate originating in pregnancy and birth must have been extremely high both for children and mothers. The rate was especially extreme in the population of newborns and babies below the age of one year; moreover many mothers lost their lives during pregnancy or birth.³⁶ Infectious illnesses causing occasional epidemics regularly decimated the population.³⁷ Cold, pneumonia, and pleurisy were common during wintertime due to the little protection against cold weather. Diarrhea and dysentery frequently occurred during summer due to insufficient hygiene. Several serious, fatal, chronic or

³¹ Pliny the Younger, *Epistulae* 5, 6, 6. and 46. (Quoted by V. Nutton, op. cit. [note 27], 21–22.)

³² *Corpus Hippocraticum*, *De aëre, aquis et locis* and Vitruvius (several places). Aristotle drew similar inferences (*De generatione animalium* 4, 767a 34–36.)

³³ V. Nutton, op. cit. (note 27), 27.

³⁴ Galen, *In Hippocratis De aëre, aquis et locis commentarii* 4.497. (Quoted by V. Nutton, op. cit. [note 27]).

³⁵ R. O'Rehilly–FMüller, op. cit. (note 1), 117.

³⁶ V. Nutton, op. cit. (note 27), 22.

³⁷ *Ibid.* 24.

acute illnesses were present all through the year in addition to the seasonal diseases, like different diseases of the liver, or of the skin, worm infections, illnesses spread by sexuality, disorders of the bone, muscle and nervous systems.³⁸

Lead also played an important role in causing congenital malformations. The everyday use of highly toxic lead between 600 and 500 BC led frequently to chronic lead poisoning in the population and to congenital disorders. Lead seriously affects pregnant women and such vital organs of unborn children, like the heart, kidneys or the bones, the reproductive and nervous systems.

The variety of using lead by the ancients completely unaware even on the existence of lead poisoning cases is a striking example of the use of a particular material without being aware of its potential negative biological impacts, like toxicity. One main origin of lead poisoning was the widespread use of lead as construction material thanks to its easy manufacturing and processing. Different water pipes and household utensils were made of lead thus poisoning water and food.

The only protection against high lead levels in water was the protective limescale coating³⁹ covering the interior of the pipes and utensils, thus reducing the contact of water and lead. This was the case if the water sources were located in hills rich in limestone or chalk (like in Rome). The hard water containing a large amount of dissolved carbonates creating a thick limescale coating. Vitruvius advised the use of terracotta water pipes after recognizing the dangers of lead pipes.⁴⁰

Another form of lead poisoning originated in early food chemistry. The ancient Romans tried to complement their sparse assets of natural sweeteners (like honey) by producing artificial sugar substitutes. They boiled must in lead pots to produce sugar syrup (defrutum), and concentrated it by further boiling into sapa. The sweetish taste (and metallic aftertaste) originate in their lead sugar (lead (II) acetate – a white crystalline) content produced by the chemical reaction between the lead pot and the must. These sweeteners were used for flavouring (sweetening), like upgrading of the taste of wine, and for fruit preservation. However, the long term consumption leads to serious health problems, like infertility, congenital disorders and a high infant mortality rate.⁴¹ The lead

³⁸ Ibid. 29-31.

³⁹ Ibid. 33.

⁴⁰ Vitruvius, *De architectura* 7, 6, 10-11.

⁴¹ For details see *J. Nriagu*, Saturnine gout among Roman aristocrats. Did lead poisoning contribute to the fall of the Empire? In: *The New England Journal of Medicine* 308 (1983), 660-663. *Nriagu* states that the permanent presence of lead led to the fall of the Roman Empire because it causes infertility and increases neonatal morbidity. Classical-philologist and pharma-

concentrate in a single liter of sapa was as high as 800 mg, which exceeds the tolerance threshold by a factor of 16000 according to the calculation of Eisinger.⁴²

Another channel of exposure of women to the toxicity of lead was the intentional use of white lead for the purpose of contraception:

„It also aids in preventing conception to smear the orifice of the uterus all over before with old olive oil or honey or cedar resin or juice of the balsam tree, alone or together with white-lead; or with a moist cerate containing myrtle oil and white-lead.”⁴³

The same material was used as cosmetics, as powder for whitening the face, or colouring the eyes and hair.

Many other kinds of problems had its origin in food pollution during processing. For instance, such vital food products like bread was frequently contaminated by different partly toxic vegetables or small pebbles and stone particles mixed into the flour during harvesting and milling of the cereals. Galen reports on a story when after consuming a plate of wheat pulp as a guest in the countryside he diagnosed in himself tympanites, constipation, headache, and vision distortion.⁴⁴ Galen strictly advises against the consumption of raw fruits, as they became easily rotten in the hot temperature, or just in the opposite way, they are dangerous in their raw form.⁴⁵

Summary

Congenital abnormalities caused by teratology related factors were already known at the phenomenological level in ancient times, despite the usual secrecy surrounding them. Ancient works on congenital disorders deliver valuable information from the point of view of medical history. At the same time by using modern, causal genesis related methods complemented with archaeological evidences for reconstructing the most probable teratogenous causes of the congenital disorders described in ancient texts contributes to a more refined picture of the ancient life.

cist *John Scarborough* however denied this theory.

(http://penelope.uchicago.edu/~grout/encyclopaedia_romana/wine/leadpoisoning.html;

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⁴² Quoted by *V. Nutton*, op. cit. (note 27), 33.

⁴³ Soranus, *Gynaecology* 1, 20, 61. (transl. by *O. Temkin*).

⁴⁴ Galen, *De alimentorum facultatibus* 6, 498-499.

⁴⁵ *Ibid.* 6, 596-598.

For instance, lead poisoning was a widespread illness due to the use of the toxic lead for a variety of purposes. Archaeological research produced an extremely rich set of artefacts made of lead. Ancient texts deliver evidences and basis for well-proven hypotheses on their use ranging from the ancient architecture to the everyday's life. Causal genetics as a part of human biology may correlate this rich scientific background in order to validate the feasibility of ancient reports on congenital deformities.