

HISTORY OF DESCRIPTION AND TREATMENT OF THE GOITRE

Andrei Bumbuluț¹, Alina Daniela Negru¹, Rumelia Koren², Călin Bumbuluț¹, Bogdan Bumbuluț³

¹SCM dr Bumbuluț-dr Balaj, Satu Mare, România, ²Department of Pathology, Hasharon Hospital, Petah Tikva, and Sackler Faculty of Medicine, Tel-Aviv University, Israel, ³Faculty of Medicine, "Victor Papilian" University, Sibiu, România

Address for correspondence:

Dr. Bumbuluț Călin

Civil Medical Society, Satu Mare

UK30 Bobocului St., Satu Mare County, PO 440258, Romania

E-mail: bumbulutcalin@yahoo.com

ORCID No 0000-0002-4669-2079

Received: 01.10.2018

Accepted: 30.10.2018

Med Con December 2018 Vol 13, No 4, 51-56

Crossref: <https://doi.org/10.33311/medcon.2018.48.4.11>

Tumours of the neck were known in ancient Egypt, about 1500 BC, where, according to the Ebers papyrus they were treated surgically, but were also used in the treatment local applications containing, among other components, salt from Lower Egypt – perhaps sea salt. Yet, it would be difficult to decide if the endemic goitre was known at that time, and it seems that no goitres was identified, either on mummies or on ancient Egyptian paintings, but in these paintings not even the basic proportions of the body are correctly shown. It is indisputable that such information couldn't reach the beginning of the Renaissance in Europe, the Ebers papyrus and Egyptian medicine being rediscovered only in the nineteenth century.

Much less could be known in Europe that the Chinese medical writer Ge-Khun (317-419 AD) described a mode of treatment for goitre consisting of seaweeds, and that the ancient Chinese used animal thyroid. We can speculate about how much the Chinese really knew of the function of the thyroid and its relationship to goitre. Such treatment with seaweeds and animal thyroid, both of which have now been established as containing iodine, lend support to the assumption that the recommendation of this therapy was based on the empirical observation that it was the



Figure 1. Image showing a large goiter, taken from a medieval Biblical illustration for Psalm 52 (<http://endocrinesurgeon.co.uk/index.php/the-medieval-goitre>)

most efficacious among other modes of treatment then in use. It would be difficult to imagine how seaweed and sponges could for thousands of years have entered as

ingredients into preparations of remedies against goitre had no favourable results ensued.

In the 5th century BC, Hippocrates in his well-known treatise on *"Air, Water and Places"*, thought they were deformities of the cervical glands (*"choiron"*) caused by drinking snow water. He was probably the first to attempt to make a distinction between the various forms of tumours of the neck.

Celsus (25BC-45AD) described a tumour – *"bronchocele"* – of the neck situated *"between the skin and the larynx that is fleshy only, or may contain a sort of honey-like substance, sometimes even containing small bones and hairs mixed together"* and he recommended incision in its treatment.

Vitruvius Pollio, a engineer and architect in service for Julius Caesar, in the last century BC pointed the poor water as the cause of *tumidum guttur* (swollen throat) in Alpine regions where this affliction was endemic: *"Aequiculis in Italia et in Alpibus nationi Medullorum est genus aquae, quam qui bibunt afficiuntur turgidis gutturibus"* (*"The Aequi in Italy and in the Medulli in the Alps have a kind of water, from drinking which they get a swelling of the neck"*) [1,2].

Caesar is credited with having noted the occurrence of a big neck among the Gauls as one of their peculiarities.

Is no hard to see with a little imagination in Ovid's words – do not forget that he spent a long time on the seaside of Pontus Euxinus – Black Sea nowadays – that reflecting his impressions on seeing the description of the consequences of goitre: *"Quodque magis mirum, sunt qui non corpora tantum Verum animos etiam valeant mutare liquores"* (*"And what is made wonderful, there are waters that have the power to change not only the body but also the mind"*) [3].

We possess a few accounts of Roman authors about the prevalence of endemic goitre in the Alps. The poet Juvenal in the 1st century AD asks: *"Quis tumidum guttur miratur in Alpibus?"* (*"Who wonders at a swelling of the neck in the Alps?"*) [4].

In book XXXVII of his *Naturalis Historiae*, also in the 1st century AD, Pliny the Elder stated that peasant women north of the Po wore amber not only as jewellery but also for medical reasons, since the water near the Alps was bad for the throat: *"Guttur homini tantum et suis intumescit, aquarum quae potantur plerumque vitio"* (*"Swelling of the throat occurs only in men and in swine, caused mostly by the water they drink"*), and in various places in his writings he lists whole series of remedies against goitre [1,5]. North of the River Po, where the plains of Lombardy stretch towards the Alps, is an area where deficiency of iodine in the water caused

endemic goitre [6]. After iodized salt was made available by legislation in Italy, the prevalence of goitre in the Tuscan Apennines close to Florence, fell from 60% to 8% [7].

In the second century AD, Ulpianus writes: *"tumido gutture praecipue laborant Alpium incolae, propter aquarum qualitatem quibus utuntur"* (*"the inhabitants of the Alps suffer from a big neck, caused by the quality of the water they drink"*).

In the same century, Galen (132-200 AD) referred to goitres as bronchoceles, bronchial dilatations, and described an operation for goitre; he was even aware of the danger of damaging the recurrent laryngeal nerve. To the glands of the neck, he described the role of secreting a fluid into the larynx and the pharynx. Medical treatment for goitre was used, Galen and after him Oribasius (325-403 AD) both knew of the favourable effects of burnt sea sponge.

The Greek physician of the Byzantine period Paul of Aegina (625-690 AD), contrasted them with neurysmal dilatations and called them steatomata or fatty swellings. A Hippocratic expression *"choiron"* was taken to stand for goitre and was subsequently employed in this sense by Paul of Aegina.

Aëtius of Amida, a Byzantine physician and medical writer who lived from the mid of the 5th century to the mid of the 6th century, recommend repeated washing of the neck with seawater, or local applications containing sea salt.

The Greek appellation *"bronchocele"* and the very similar expression in Latin *"tumor gutturis"* or *"guttur tumidum"* prevailed until the 17th, and to some extent until the 19th, century. *Guttur tumidum*, the popular appellation for goitres, became *"gozzo"* in Italian, *"goitre"* in French and *"Kropf"* or *"Struma"* in German.

In the twelfth century, Ruggero da Parma (Rogerius Salernitanus), a famous Magister of the Scuola Salernitana, describes, in his *"Elettuario Terapeutico"*, medical and surgical treatment of the disease. *"Botium"* was another term sometimes encountered, thus Ruggero wrote *"De cura botii"*. Rogerius Salernitanus in *"Chirurgia Rogerii"*, 1170, Gilbertus Anglicus of the Montpellier School in *"Compendium Medicinæ"*, 1240, and Bruno di Longobucco of Padua in *"Chirurgia Magna"*, 1252, all described surgical operations for goitre, and their works show that these teachers knew goitre as such and had come into contact with it in the course of their medical practice. But the medical treatment had not been forgotten: Rogerius advised an electuary containing about 13 ingredients, among them the ashes of burnt sea sponge.



Figure 2. Surgeon operating on a neck, miniature from "The Surgery" of Master Rogerius

Italian figurative art representing this pathological manifestation has been very rich since the twelfth century [8].

In the thirteenth century, the disease is described as "*bocium fit in gula habitantibus montes*" ("a flower blowing in the neck of highlanders,") in "*Compendium Medicinæ*", written by Gilbertus Anglicus [9].

In the 14th century, Arnold of Villanova (1235-1311) found goitres responded best to a combination of sponge and seaweed, while Guy de Chauliac (1300-1370), a surgeon in Montpellier, recommended surgical extirpation. Guy de Chauliac wrote: "*Botium aegritudo regionalis et hereditaria apud multos reputatur*" ("Goitre is frequently considered to be a local and hereditary disease").

Guido Lanfranchi from Milano (c. 1250 - 1306), a Italian-French physician and surgeon, considered hard water, especially that found in the Alpine region and in Lombardy, to be the cause of goitre.

Philippus Aureolus Theophrastus Bombastus von Hohenheim, a German-Swiss doctor, well known as Paracelsus (1493-1541), was the first to find a close relationship between endemic goitre and cretinism [10,11], but he compared goitres to the burls of trees and believed they were produced by the irritation of minerals in the water.

All these were mere speculations since anatomical studies had ceased at the end of the Hellenistic period. The influx of Greek refugees in Italy at the beginning of the Renaissance restored an interest in antiquity: Greek

and Roman texts were re-introduced and anatomical dissections resumed. Until then, artists depicted mainly religious themes: the Resurrection and the Lives of Saints, the Virgin and Child, the Passion of Christ, but having solved the problem of perspective, the artists of the Renaissance was providing accurate representations of the world around them [12].

The thyroid as such was as yet unknown and the first drawing of the organ was a sketch by Leonardo da Vinci made in 1510, part of a series of anatomical studies he was conducting at the hospital of Santa Maria Nuova in Florence, but the drawings were probably of a nonhuman specimen [13] (Figure 4).

Recognition of the thyroid gland as an anatomical and physiological entity required human dissection. Unaware of the role of the thyroid, Leonardo wrote in the margin of his sketch: "*these glands are made to fill the interval where the muscles are lacking and hold the trachea away from the sternal notch (forcula)*" [14]. Leonardo's drawings and notebooks disappeared after his death in 1519 and they reappeared just in the 18th century, therefore Vesalius in 1543 in a study technically and artistically inferior to Leonardo's sketch, drawn after the thyroid of a domestic animal, made an incorrect assumption that the human thyroid is similar to that of other species.

Gabriele Fallopio (1523-1562) obtained success even with 4-6 spoonfuls of sea water, taken daily over a prolonged period.



Figure 3. *Reiner Musterbuch* ("Book of Samples") ex *Codex, Vindobonensis 507* (1208-13) Austrian National Library, Vienna, *The Fool*

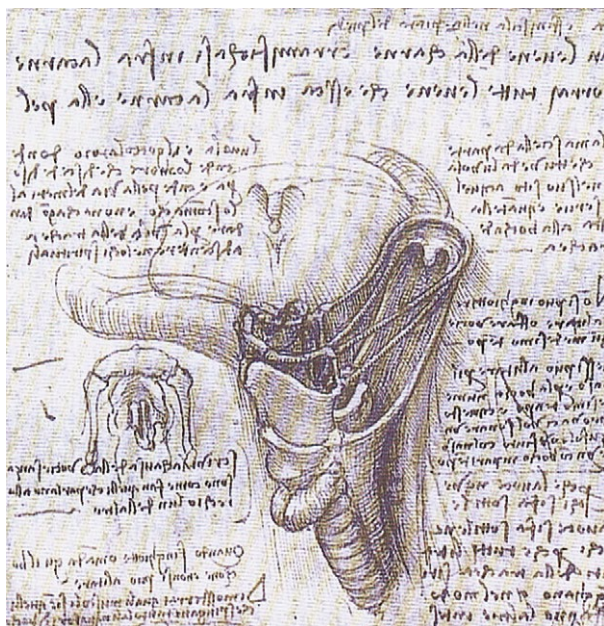


Figure 4. Leonardo da Vinci,
First anatomical drawing of the thyroid

The copper etchings of Bartholomew Eustachius (1520-1574) made in the 1560s were obviously of humans, referred to the thyroid as "*glandula laryngis*", but were not actually published until 1714 with a description by Johannes Maria Lancisius.

Richard Wiseman, (1622-1676) a surgeon to the English monarch, believed goitres were caused by scrofula (tuberculous adenitis) [15].

Only in 1656, Thomas Wharton published "*Adenographia*", a monograph on the glands of the body in which he first used the term "*glandulae thyroideae*" and attempted to assign a function to the gland.

Albrecht von Haller (1708-1777) was the first to realize goitres were enlargements of the thyroid gland, but he offered no explanation for the hypertrophy [16]. He first used the word "struma" when he remarked that: "*Strumis longe plerumque thyreoidam glandulam vitari vulgo notum est*" ("It is generally known that goitre is mostly an affection of the thyroid gland")

In the 19th century, Gaspard Adolphe Chatin, a botanist and pharmacist, suggested that "*too little iodine in the drinking water might well be the principal cause of goiter*" [16] and advised using iodine-rich products to treat them. The deficiency of iodine was caused probably by the melting of glaciers, at the end of the quaternary with the leaching of iodine from the soil.

The many descriptions of goitre and cretinism to be found in the classics and in Italian literature of the Middle Ages show that thyroid disease has been a problem in Italy from earliest times. Geographically, the endemic occurs to a varying degree throughout the

whole of the Alpine region in the north of the country, in a semi-circular belt extending from the Ligurian Alps through Piedmonte, Lombardia and Trentino to Venezia in the east. The disease is found not only in the upland valleys, but also in the plains north and south of the river Po, although to a much lesser extent [17].

Robert Walsh was born in Waterford, Ireland, where many of his ancestors had been chief magistrates, in 1772. He became chaplain to the British Embassy in St. Petersburg and then in Constantinople in 1820. Walsh acquired a medical degree, and practised for some time as a physician. His description of the goiter it may be perhaps the most plastic one of the pathology in the Romanian Countries, during his traveling from Constantinople at the beginning of the nineteenth century, but also an explanation of the origin of the Romanian language, at a time when Europe's peoples was at the beginning [18]:

"We stopped at the post-house of Prepora to breakfast, and, while taking off my great coat, a man came to assist me. We had heard that the plague was in this village, and looking in the man's face I saw an immense tumour, under his jaw, as big as a child's head, and apparently just ripe for lancing. I naturally shrunk from the contact of such an assistant, when, the Kiaya, or agent of the post, said to the man, in distinct Latin, "*sepone*," and the man stood aside; he then turned to me and said, with the same distinctness, "*Tumor non est pesti, domnee, est gunsha*." I now found, not only that the peasants here spoke Latin, but that they were



Figure 5. Leonardo da Vinci 1452-1519,
Human head, Pinacoteca Ambrosiana, Milano

afflicted with tumours in their necks, like the Goïtres of the Alps. These tumours were so common that, of seven persons then in the post-house, five were afflicted with them, including our two postillions. A very little fellow, like a dwarf, now came up to me; he had a silly, vacant countenance, seemed incapable of uttering articulate sounds, and made a motion, by putting his finger in his mouth, that he was hungry. I inquired if there were many such dwarfs here, and the Kiaya said, "*Sun multi, innumerabile*". They abound in every village in the mountains; and they are considered as half fools. Here, then, were the Goïtres and the Cretins of the Alps, in a region where I had never heard of them before. There are none to be found in the chain of the Balkans, where the humidity of the atmosphere descends in rain; but they are abundant in a ridge of mountains not two hundred miles distant, where the vapours fall in snow. This is another presumption in favour of the popular opinion as to the cause – drinking dissolved snow water; an opinion which the people themselves here have adopted. I did not find, however, when I was at Brusa, that any persons complained of this, though the only water they use the whole year is dissolved snow from Mount Olympus. I felt some of these tumours, and they did not appear to have any connexion with the maxillary or salivary glands; they were in the lower part of the throat, loosely attached, and freely moveable without the smallest pain or inconvenience, and sometimes hung so low as to rest beneath the clavicles.(...)

A crowd of fellows in sheep-skin jackets, and with swelled necks, were preparing their breakfast, which consisted in some bones of mutton and masses of boiled Indian corn forming a consistent yellow jelly, and carried on bits on board." (...) The Italian language has been generally spread through the east of Europe by the Venetians and Genoese, and it is more universally spoken at Pera than French; but the Italian language, thus introduced, is confined to maritime towns, with which these remote and secluded people could not have any possible communication. The terms, therefore, which they use, which seem to have an affinity with Italian, cannot be derived from the modern language, but must have been the remains of that phraseology which the Romans left the Dacians sixteen hundred years ago. In fact, the words "*domine, uxor*" (...) are not Italian words; and people living in the East, who derive their language from that modern people, say, "*seigneur and moglie*".

According to our data, this text is not known and wasn't translated into Romanian until now, containing a series of novel information about the inhabitants of the Romanian mountains of those times.

References

1. Merke F. *History and Iconography of Endemic Goitre and Cretinism*. Berne: Hans Huber, 1984: 22-8, 92-100.
2. Vitruvius PM. *De Architectura*, lib. VIII, 3,20.
3. Ovid. *Metamorphoses*, lib. XV, 317-318.
4. Juvenal. *Satire* XIII.
5. Pliny the Elder. *Historia naturalis*, lib. XI, 37, 68, lib. XXV, 109, 2, lib. XVI, 12, lib. XXVII, 44, lib. XXVIII, 51, lib. XXX, 12, 3, lib. XXXII, 28.
6. Kelley FC, Snedden WW. *Prevalence and geographical distribution of endemic goitre*. World Health Organization Monograph Series No. 44: Endemic Goitre. Geneva: WHO, 1960:27-233.
7. Aghini-Lombardi F, Pinchera A, Antonangeli L, et al. *Iodized salt prophylaxis of endemic goiter: an experience in Toscana (Italy)*. Acta Endocrinol (Copenh) 1993;129:497-500.
8. Giampalmo A, Fulcheri E. *An investigation of endemic goiter during the centuries in sacral figurative arts*. Zentralbl Allg Pathol Anat 1988;134:297-307.
9. Cirrani R, Castagna M, Fornaciari G. *Goiter in an Eighteenth-Century Sicilian Mummy*. American Journal of Physical Anthropology 1999;108:427-32.
10. Merke F. *The history of endemic goiter and cretinism in the thirteenth to fifteenth centuries*. Proc R Soc Med 1960;53:995-1002.
11. Brothwell DR, Sandison AT. 1967. *Disease in antiquity*. Springfield, IL: Charles C. Thomas. 1967;521.
12. Vescia FG, Basso L. *Goiters in the Renaissance*. Vesalius 1997;3(1):23-32.
13. Lydiatt DD, Bucher GS. *Historical vignettes of the thyroid gland*. Clin Anat. 2011;24(1):1-9. doi: 10.1002/ca.21073.
14. O'Malley CD, Saunders JB. *Leonardo da Vinci on the human body*. Henry Schuman, N.Y. 1952;386,387.
15. Medvei VC. *A History of Endocrinology*. MTP Press, Hingham, MA. 1982;136.
16. Merke F. *History and Iconography of Endemic Goitre and Cretinism*. Hans Huber publishers, Berne, 1984;12,29-45,154,190.
17. Kelly FC, Snedden WW. *Prevalence and geographical distribution of endemic goitre*. Bull. Wid Hith Org. 1958;18,5-173:58.
18. Robert Walsh. *Narrative of a Journey from Constantinople to England*, fourth edition, London, 1831, pp 214-7.