

HISTORY OF ONCOLOGY

Hippocrates (ca 460-370 BC) on nasal cancer

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Summary

The prevalence of cancer in antiquity is rather an unknown scientific field. Nevertheless, During the 5th century BC, Hippocrates and his followers, studied thoroughly this fatal disease and proposed surgical techniques and palliative drugs to confront and treat the malignant tumors caused by the black bile (the 4 humors theory). Inside Corpus Hip-

pocraticum, nasal cancer was mentioned, alongside with its treatment. Local surgical excision, cauterization, drugs to relief the pain and face possible metastases combined with a possible pessary technique and endotracheal intubation, have been employed by the physicians of the era.

Key words: ancient Greece, cauterization, Hippocrates, intubation, nasal cancer, surgery

Introduction

Today cancer represents one of the main causes of death worldwide, with numbers more than doubling in the last three decades. Cancer's global increase has largely been blamed on environmental and lifestyle related factors such as smoking, dietary constituents and earth's pollution, as well as a longer life expectancy and gene heredity [1]. On the other hand, very little is known about cancer in antiquity, its epidemiology and evolution in ancient past human populations. Nevertheless, ancient medical documents indicate pathological conditions, tentatively identified as cancer. Cancer was a well known nosological entity among the ancient Greek medico-philosophers and the body humors were to be blamed for it [2].

Various references of cancer could be found inside Corpus Hippocraticum. All tumors (Greek: όγκοι, onkoi=abnormal swellings) were considered to be of inflammatory origin, the result of unfavorable humoral fluxes, or humors in excess, and caused by an extravascular outpouring of fluid into soft tissue spaces. In Hippocratic literature tumors were mainly classified as "karkino-

mata", "phumata", "theria", "elkoi", "scirrhoi" and "oidemata" of neoplastic nature [3,4]. Tumors thus arose from a localized inflammation when flux caused an overconcentration of one of the 4 humors (black bile) from the veins into the fleshy (Greek: σάρκα=sarks) or parenchymal components of the body part (Greek: παρέγχυμα=parenchyma) [4,5].

Cancer's medical field in antiquity was mainly dominated by ancient Greek physicians, firstly and most notably by Hippocrates, who systematized and developed the black bile cancer theory and took a more pragmatic and scientific stand in explaining this disease. Driven by the systemic observation on all its phases, Hippocrates liberated diseases from demons, religion, superstition, magic and folklore methods and thoroughly described clinical signs and symptoms of the various human tumors, naming them "ΚΑΡΚΙΝΟΣ" (karkinos), meaning crab and moreover established ethical rules, methods and barriers for the treatment [6]. The Hippocratic corpus was the first medical text to use the words "karkinos"



Figure 1. Hippocrates: portrait oil on canvas by Chris Johnson.

and “karkinoma” (superficial: karkinoma apertus, deep tumors: karkinoma occlusus) to describe a non-healing swelling or ulceration and malignant non-healing tumor respectively. Hippocrates also introduced the word “scirrhus” to describe the hard tumors [7,8].

Hippocrates (Figure 1) recognized and described a rare form of cancer in his era, the nasal carcinoma, and proposed its treatment [9]. Our study synthesizes the Hippocratic fragments on the matter to unveil Hippocrates opinion.

Nasal cancer inside Corpus Hippocraticum

Hippocrates was born in Kos island approximately during the 27th Agriana (April or May) 460 BC, the first year of the 80th Olympiad, 30 years before the Peloponnesian war [10]. Hippocrates and his followers classified cancer as superficial (Greek: ΑΚΡΟΠΑΘΟΙ), and deep-invasive (Greek: ΚΡΥΠΤΟΙ, or ΥΠΟΒΡΥΧΙΟΙ) [11], while surprisingly they had recognised a hereditary type named “symfytos” (Greek: ΣΥΜΦΥΤΟΣ) [8]. They had identified the nasal cancer as a superficial type, “on the edge side of the marginal nasal cartilage, could some kinds of small cancers to be presented” [9],

presented in elder patients [12]. In the case of a bigger tumor, surgical excision followed by a careful cauterization should be applied [7,8]. Cancer’s onset embitters the mouth cavity [7], and in the case of a late treatment metastases could occur, “the theriac (beast) ulcer (cancer) spreads in the body’s surface with an inflammatory surrounding flesh and ulceration lips are large. When the ulcer is wet, a parched ichor could be observed, or the ulcer may present dense texture, the thick ichor running from it prevented the ulcer with a dense texture to diffuse out to the flesh from the hard layer. The flesh soaked is oedematous itself due to the inflammation, the ichor passes beneath it, causing rot and swelling” [5]. At the end, malignant cachexia affects the whole body, “and the entire body exhibits emaciation, and nostrils are dry and clogged, without having the opportunity to expand” [13].

As far as the treatment is concerned, besides surgery, various drugs could be used to treat or palliate [3]. A plethora of surgical instruments were at surgeon’s disposal alongside with gauzes, compresses, bandages and drugs (powders, liquids, ointments, creams etc). Dioptras, hedrodiastoleus, mochliskos, ostagra, kauterion, motos moloubus, catheters, metrechytes, agkistra, tricholabis, embryoukos, staphylagra, osteotomes, scalpels, psalis, spathomele, cyathiscomele [14,15], “all placed harmonically inside the surgeon’s medical bag, arranged in the most appropriate way, following a methodical layout, as physician cannot keep everything in mind”, as Hippocrates stated [16,17] (Figure 2). For extensive operations, Hip-



Figure 2. A & B: Greco-Roman 6-compartment medical boxes and surgical instruments. Archaeological Museum, Naples. **C:** Greco-Roman surgical instruments, found by Dr G Savenko in 1819 at Pompeii in the Via Consularis, inside a surgeon’s house.



Figure 3. A botanical illustration inspired art about mandrakes, Codex Seraphinianus, 1981.

Hippocrates had used the famous Thessaly's endemic plant mandrake (Greek: ΜΑΝΔΡΑΓΟΡΑΣ) (Figure 3) as a general anaesthetic (it contains scopolamine), combined with morus alba (Greek: ΟΠΙΟΣ ΜΟΥΡΩΝ) and hedera (Greek: ΟΠΙΟΣ ΚΙΣΣΟΥ), known sedatives of the era [18-20]. Antisepsis' strict protocol was to be followed, performed by multiples rinses of clean boiled rain water, fire-water, salt, hot sea water (hypertonic serum), copper, tar (contains carbolic acid), resin, perfumes (myrrha, boswellia, thymus, cinnamomum, salvia, pinus, cypressus sempervirens, artemisia absinthium, aloe), milk and fire (Greek: ΠΥΡ) [3,21-24]. For smaller operations, in the case of minor tumors, "only a careful superficial excision and cauterization should be performed, and the wounds should be dusted with Black Hellebore plant (helleborus niger) (Figure 4) when rot, cleaned afterwards with copper flower (an oxide), and poured with honey" to finish the therapeutic approach [9]. Dyspnoea (mostly caused by the "phlegm"-humors theory), could sometimes be severe, and an acute death could occur during both a small or a more invasive surgical operation, or due to the tumor's vol-



Figure 4. Black Hellebore (Helleborus niger), Christmas L rose. Köhler FE, Medizinal Pflanzen, 1890;4:38.

ume. In a more daring thought, to avoid such an incident, or to help the patient undertake the surgical interventions needed, Hippocrates introduced the endotracheal intubation, by using a thin stannum (tin) tube through the larynx, "for the lung to attract pneuma" (Greek: ΠΝΕΥΜΑ, English: pneuma ≈ air = the vital force of the soul) [25,26].

The pharmaceutical drugs should be primarily aimed at the cleansing, and diaphoresis (expulsion or expulsion), combined with bloodletting-phlebotomy [8]. During the cancer's elation period the patient should be monitored, and the diet had to be determined, as well as the whole way of patient's daily life (Greek: ΔΙΑΙΤΑ, diaita/diet). We may hypothesise that in the case of a big deformable tumor, when no air could pass the nostrils, or after a more aggressive operation, the physician could proceed to the progressive opening of the airways with numbered waxes, and when the required expansion was to be reached, pillars made from rods of pine (Greek: πυτύνες μύλες), very greasy, covered with oil, should be placed, followed by one lead pessary (something like a tampon) to be placed, with an interior lumen filled with crushed

sheep fat, so that an artificial nose opening to be formed, a procedure similar to the treatment of the vaginal cancerous tumors [13].

Epilogue

Cancer in antiquity presented a fatal disease,

almost impossible to escape the thorough study by ancient Greek pundits [8]. Nasal cancer and nasal polyps (presumably benign) although rarely mentioned inside medical texts as a visible superficial malignancy, were easily accessible to be treated [27]. Physicians' beliefs of the era remained unchanged and endured for centuries [8].

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