

Dermatopathology in Historical Perspective

An Inquiry on Philoctetes's Disease

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PHILOCTETES

In the second book of Homer's *Iliad*, Philoctetes is recorded in the Catalogue of Ships, the list of famous Greek heroes who took part in the military expedition against the ancient town of Troy (1). He was the son of Poeas (2), one of the famous 50 Argonauts, who, led by Jason, sailed for Colchis to conquer the mythological Golden Fleece (3). Philoctetes's native land was Melis, a small mountainous region of Thessaly, located in the Greek peninsula, in front of the northwest coast of the island of Euboea and close to Mount Oeta, where Heracles died.

Philoctetes was a noble and experienced archer, leader of seven ships of the Achaean army (1). However, before the arrival on the Trojan coast, during a propitiatory sacrifice on the islet of Chryse (3), a snake, provoked by the nymph Chryse, whose amorous advances Philoctetes had rejected, bit him in the foot, causing a painful wound (4). Thus, because his loud groans severely disturbed their libations and sacrifices, the army could no longer tolerate his company and Agamemnon, the leader of the expedition, ordered Odysseus, king of Ithaca, to leave him on the island of Lemnos (1,4).

After 10 long years of war, Achilles, the strongest Greek hero, was dead; the Achaeans still had not taken Troy and had begun to despair. At that time, it was prophesied either by the Trojan soothsayer Helenus (3) or by the Greek Calchas (4) that Troy could not be taken except with the help of Heracles's bow and arrows (3,4). Because the owner of Heracles's weapons was Philoctetes, who had received them from Heracles himself as a reward for kindling his funeral pyre on Mount Oeta, Odysseus was sent to Lemnos to lead him to the Greek camp,

in front of the plain of Troy (3). At first, Philoctetes, angry with Agamemnon and Odysseus, rudely refused to come to Troy; however, persuaded by an intervention of the god Heracles, he then agreed to come to the Achaean camp, where he was treated by the surgeon Machaon (4) and recovered from his disease. Philoctetes then killed Paris, one of the Trojan king Priam's sons, and the man who had caused the long war by abducting Helen, the beautiful wife of Agamemnon's brother, Menelaus (4). In the end, Troy was taken by the stratagem of the famous wooden horse and Philoctetes could return, finally, to his native land.

THE SOPHOCLEAN TRAGEDY

Sophocles (496-406 BC), who, with Aeschylus and Euripides, constituted the great triad of the Attic tragedy, wrote more than 120 plays. The mission of Odysseus to Lemnos to fetch Heracles's bow and arrows from Philoctetes is the argument of *Philoctetes*, one of the seven Sophoclean tragedies extant.

Upon his arrival at Lemnos with Neoptolemus, the son of Achilles, Odysseus immediately plots a deception, inducing his reluctant friend to feign anger toward Agamemnon and the Achaeans, in order to gain Philoctetes's confidence. Philoctetes, thus deceived by Neoptolemus, tells him of his great sufferings due to his disease, begging Achilles's son to travel to Greece with him. As Neoptolemus is granting Philoctetes's request, a spy of Odysseus, disguised as a merchant, gives false notice that Odysseus and Diomedes already have sailed for Lemnos. Thus frightened, Philoctetes forces Neoptolemus to accelerate their time of departure but, struck by an attack of his illness, commits Heracles's weapons to Achilles's son and falls asleep. When Philoctetes wakes, Neoptolemus reveals that he will lead him to Troy. However, Philoctetes's great sorrow and deep discouragement touch Neoptolemus, who is taken away by Odysseus to prevent him from returning the bow and arrows to their

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rightful owner. Philoctetes falls into a severe dependency but obstinately refuses to follow Odysseus. At that time, Neoptolemus, affected by Philoctetes's sufferings, repents his deception, refuses to sail with Heracles's weapons without Philoctetes, and returns them to the unfortunate hero. Following another vain attempt to persuade Philoctetes to come to the Greek camp, Neoptolemus, keeping his promise, is setting out for the ship to lead Philoctetes to his native land. In that moment, the god Heracles appears *ex machina* and orders Philoctetes to go to Troy, where a glorious destiny awaits him. The hero obeys the god, leaving the island of his exile (5,6).

MYTHS, TRAGEDIANS, AND MEDICINE

Every myth contains an unalterable core, representing its point of contact with reality, consisting of a historical or physical event, in which over time several elements (symbolic meanings, poetic images, artistic ornaments) are stratified (7). The core of Philoctetes's myth is a disease, which, in the Sophoclean tragedy, is presented in the foreground with a detailed description allowing the opportunity to analyze all available elements and to attempt a clinicopathologic investigation, in the hopes of identifying his affliction. Of course, special caution is necessary in interpreting the text, as poets often integrate arbitrary artistic elements into real facts; moreover, such texts were written in times when physicians had only vague notions of anatomy, physiology, and pathology (7). Tragedians, however, are artists who, more than others, address medicine and pathology. A natural affinity, in fact, exists between tragedians and physicians, as both deal with and share the "dreadful spectacles" of human sufferings (8). Tragedians generally retained an archaic concept of disease, considering it divine punishment, rather than a physical event. However, they were not immutable or indifferent to medicine's progress, as the relationship between several tragic verses and some passages of Hippocrates's medical treatises seems to demonstrate. Moreover, tragedians at times directly employed medical terminology and scientific descriptions (8). An influence of earlier Hippocratic texts on the later Sophoclean plays has been considered not only chronologically possible (Hippocrates was 56 years old when Sophocles died) but probable (8).

AN ANALYSIS OF THE TEXT

Philoctetes's disease was characterized by the following nine elements.

(I) The affected anatomic site was the foot (πούς) (vv. 7, 291, 697, 824) (6). Odysseus says (vv. 4-7),
This is the place where, many years ago,
Acting on the orders of our overlords,
I left Philoctetes the Malian, Poeas' son,
Lamed by a festering ulcer in his foot. (5)

And Philoctetes (vv. 290-292),

... it was I

That had to crawl and drag myself along,

With this wretched foot, to where the quarry fell. (5)

(II) The lesion was an ulcer (hélkos), as defined by Philoctetes himself (v. 690) and by the chorus (v. 696) (6).

Philoctetes (vv. 649-650):

... A certain herb

I have, which I mostly use to soothe this wound. (5)

Chorus (v. 696):

... of his ulcered limb. (5)

(III) The lesion had a duration of 10 years (v. 312) (6). Philoctetes (v. 312):

Ten years a-dying of hunger and wretchedness. (5)

(IV) The lesion was caused by a snake (óphis) bite (v. 1328), defined by Philoctetes as a viper (echidna) (v. 632) (6). Neoptolemus (vv. 1326-1328):

This plague you suffer is a judgment sent from heaven.

For having trespassed on the domain of Chryse,
And encountered her sentinel, the secret watcher,
The serpent that guards her open sanctuary. (5)

Philoctetes (v. 632):

The viper, that did this mischief to my foot. (5)

(V) The lesion was immediately painful. Odysseus remembers that Philoctetes filled the camp with wild cries, howls, and groans (vv. 9-11) (6). Odysseus (vv. 8-11):

... he would moan and howl incessantly;
Our camp was never free of this frantic wailing.
Never a moment's pause for libations or prayer,
But the silence was desecrated by his tortured cries. (5)

(VI) The lesion was still painful after 10 years (vv. 705-706), the pain being intermittent (vv. 807-808) (6). Philoctetes says, "It comes after long intervals, when it is tired to wander elsewhere" (vv. 758-759) (6). Philoctetes (vv. 758-759):

The demon comes from time to time
After letting me alone for a little while. (5)

and (vv. 807-808)

... it comes upon me suddenly,

Then goes as quickly. . . . (5)

(VII) The lesion was malodorous (vv. 520, 876, 890-891, 1032) (6). Philoctetes (vv. 874-876):

... you are a true nobleman

To endure it all so bravely, the cries, the foulness,
Which I have afflicted you with. (5)

(VIII) The lesion discharged a disgusting (v. 39), sanguinous (vv. 695, 782-784) material (6). Neoptolemus (vv. 38-39):

... rags hanging out to dry,

Stained, it appears, with the flux of a nasty wound. (5) Philoctetes (vv. 783-784):

The dark blood oozes still from the deep vein. (5)

(IX) Acute attacks occurred with (a) severe pain—Philoctetes exclaims, "I feel it devours me" (v. 745) and begs Neoptolemus to cut off the affected foot his sword (vv. 747-749), (b) sweating (v. 823), (c) hemorrhage (v. 824), and (d) fainting (v. 826) (6). Philoctetes (vv. 745-749):

It goes right through me like a knife.
I'm done for, boy . . . it's come for me now,
Your sword, if you have it. . . . For God's sake,
boy.

Cut off my foot! Off with it! Quick! (5)
Neoptolemus (v. 823):

He sweats from head to foot. . . . (5)
and (v. 824):

. . . and the blood wells in a dark
Stream from his heel. . . . (5)
and (vv. 825-826):

. . . Let us leave him in peace, men; leave
him to sleep. (5)

PHILOCTETES'S DISEASE

Philoctetes's disease affecting his foot was characterized by a chronic ulcer, bleeding and discharging a purulent and malodorous material. The ulcer, which developed when Philoctetes was on the islet of Chryse, was the result of a venomous snake (vipera) bite, which, however, did not cause the hero's death. To some, the nonmortal character of Philoctetes's bite has been considered nonsense, revealing the fictional aspect of the narration (9). Well established, however, is that venomous snake bites may not cause death. In one study of >500 cases of venomous snake bites, 20% of patients presented with no symptoms of poisoning, while an analysis of another series showed that <50% of subjects bitten by a cobra developed symptoms of poisoning (10). There is no reason, therefore, to doubt this aspect of the Sophoclean text. The bite was immediately painful, so much so that Philoctetes's cries caused his exile. In snake bites, pain of varying severity is generally present. Several snakes belonging to the genus *Crotalus* usually cause mild pain only; others, however, such as *Crotalus adamanteus* and *Crotalus atrox* cause severely painful wounds (10). Viper bites, particularly, may cause severe local pain with erythema, swelling, and cyanosis (11).

Philoctetes's disease, resulting from a snake bite, was not mortal, but became a chronic affliction. To explain such a fact, it is necessary, therefore, to consider that a second pathologic event, a chronic infection, occurred on the island of Lemnos, where Philoctetes was abandoned.

Chronic infections affecting the lower extremities, possibly related to previous trauma and whose causative agents are present in wild and woody re-

gions, include maduromycosis (mycetoma, Madura foot), chromoblastomycosis (chromomycosis verrucous dermatitis), and botryomycosis (actinophytosis, bacterial pseudomycosis).

Maduromycosis is a chronic, suppurative infection of the subcutaneous tissue and contiguous bones, caused by various Actinomycetes as well as true fungi (Eumycetes) found in soil and plants (12). Maduromycosis usually begins at the site of minor trauma (penetrating injuries from splinters, thorns, snake bites), occurring in tropical and subtropical regions but also found in temperate zones (13). The single most common site of infection is the foot (68-79%), the initial lesion being a small firm and painless subcutaneous swelling, generally between the first and the second metatarsal bone. The infection spreads locally along fascial planes, creating numerous small abscesses and sinuses, extending to the skin surface, and opening to discharge serosanguinous liquid (12) or pus-containing granules of varying size and color (14). No fever, anemia, weight loss, or systemic abnormalities accompany the disease (12). Pain may occur in association with the presence of multiple fistulae, osteitis, and arthritis (13).

Chromoblastomycosis is a chronic mycosis of the skin and subcutaneous tissues, caused by several different fungi (12), recovered from soil, wood, vegetable debris, and similar substances (15). Lesions cause few symptoms and slowly enlarge, lasting from months to years. The initial lesion is often located in the lower extremities and is related to a history of minor trauma, such as cuts, thorns, and slivers (12). Lesions appear as verrucous plaques or nodules, often ulcerated and crusted (12), that tend to bleed easily and may discharge a white caseous exudate (15). Some patients complain of itching and pain (15), but systemic symptoms (fever, weight loss, or malaise) are absent (12).

Botryomycosis is a chronic suppurative and granulomatous bacterial disease, clinically resembling a fungal infection, caused by pathogens of low virulence: usually *Staphylococcus aureus* in association with other forms as *Pseudomonas aeruginosa*, *Escherichia coli*, *Proteus*, etc. (16-18). The disease presents as cutaneous inflammation with diffuse swelling, nodules, abscesses, and fistulae, which communicate with ulcerated areas and discharge purulent, sometimes malodorous material, containing small, yellowish grains (16,19). The infection, which may follow trauma and be associated with foreign bodies, can occur in unexposed and exposed skin surfaces (head, feet, hands). Muscle, bone, and visceral (lung, liver, bowel, brain etc.) involvement may be observed.

Comparison between the description of the clinical features of Philoctetes's disease and that of the proposed afflictions shows a close clinical resemblance. Each of the considered diseases is chronic, may affect the foot and be caused by trauma, may present as cutaneous ulcers, and may discharge purulent sanguinous material. Philoctetes's disease, however, presented as a peculiar association of pain with malodorous lesions, while none of the proposed diseases does. Although generally painless, both maduromycosis and chromoblastomycosis may present with pain but without foul odor; botryomycosis may cause foul odor, but no pain (Table 1).

Therefore, a third pathologic event has to be considered: a subsequent bacterial infection. Secondary infection may occur in patients with maduromycosis, causing them pain and systemic symptoms (13). In patients with chromoblastomycosis, secondary infection may provoke pain and malodorous lesions (12,15). Botryomycosis can be excluded most likely, if this third event is correct, because lesions are ordinarily caused by bacterial agents. The similarity of the clinical features of both maduromycosis and chromoblastomycosis makes it difficult to establish with which of them Philoctetes's disease can be identified. Maduromycosis, however, can be considered as less probable, because malodorous lesions are not reported in several series (12-14) and also because maduromycosis frequently involves bones, muscles, nerves, and tendons, causing in time severe and permanent damage (12); these facts would be in contrast with the complete and relatively rapid recovery obtained by Philoctetes, once he arrived in the Greek camp. Chromoblastomycosis appears, therefore, as the affliction most closely approximating Philoctetes's

disease, with prominent overlap in all eight of the considered features. Of the elements constituting the acute attacks described by Sophocles, sanguinous discharge, hemorrhage, and pain are clinical features occurring in chromoblastomycosis, while sweating and fainting seem to be due to the autonomic nervous system response to the intense pain.

The proposed sequence of pathologic events reasonably explains all the elements described in Sophocles's *Philoctetes* (5,6), as well as the elements reported by other sources such as Homer's *Iliad* (1), with no changes necessary to adapt the text to the proposed hypothesis. In this context, chromoblastomycosis, caused by a snake bite and superinfected by bacterial agents, may be the chronic disease that affected the ancient hero Philoctetes for 10 years on the island of Lemnos, 32 centuries ago. □

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TABLE 1. Comparison of Clinical Features of Philoctetes's Disease and of Some Chronic Infections

Feature	PD	M	C	B
site of lesion: foot	+	+	+	+
chronic course	+	+	+	+
cutaneous ulcer	+	+	+	+
purulent discharge	+	+	+	+
anamnesic trauma	+	+	+	+
foul odor	+	-	-/+ (1)	+
bleeding	+	+	+	+
pain	+	-/+ (1)	-/+ (1)	-

PD = Philoctetes's disease; M = maduromycosis; C = chromoblastomycosis; B = botryomycosis; + = present; +/- = inconstant; - = absent. (1) lesions superinfected by bacterial agents