

LIVER ABSCESS IN ANCIENT GREEK AND GRECO-ROMAN TEXTS

APSCES JETRE U ZAPISIMA STAROGRČKE I GRČKO-RIMSKE MEDICINE

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SUMMARY

Objective: This paper presents liver abscesses, as studied in the ancient Greek and Greco-Roman bibliography. **Methods:** Numerous references concerning this entity can be found in the writings of the Hippocratic doctors (5th cent. B.C.), Archigenes of Apamea (1st cent. A.D.), Galen (2nd cent. A.D.), Aretaeus of Cappadocia (2nd cent. A.D.), Oribasius (4th cent. A.D.), Theophilus Protospatharius (7th cent. A.D.), and Paulus Nicaeensis (7th-10th cent. A.D.). **Results:** In most cases the clinical manifestations, the prognosis and the method of treatment are presented. In all ancient writings we studied, the rupture of a liver abscess is also part of the main theme. In specific, the path that the fluid would follow after a rupture was considered to be a main prognostic factor, i.e. if the fluid "coursed into the stomach", the patient would definitely die. **Conclusions:** In this work, an attempt is also made to correlate the ancient descriptions to modern medical entities, such as amebic or pyogenic liver abscess.

Key words: History of medicine; Greek and Greco-Roman medicine, history of liver; liver abscess.

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Liver abscesses appear in texts early in the history of medicine. In particular, in the *Hippocratic Corpus*, the word “abscess” appears several times. Later on, physicians continue to deal with this topic thus providing more information about it. Except for the Hippocratic physicians, Archigenes of Apamea, Galen and his contemporary Aretaeus of Cappadocia, Oribasius, Theophilus Protospatharius, and Paulus Nicaeensis present their views on liver abscesses in their texts.

In the Hippocratic texts, the references concern either general information about abscesses or specific organ affections, such as abscesses in the knee, the neck, near the ear, the parotid, or in the liver. Specifically for the liver, the prognosis and methods of treatment are described in detail. The presence of an abscess in the liver is related with fever, blisters, accumulation of pus, and death. In the *Aphorisms* cauterization or incision is proposed for their treatment. After performing surgery, if the pus is clean and white, it indicates that it was contained in some kind of membrane, and the patient may survive. If the pus is similar in color to the dregs of olive oil, the patient has no chance to survive [1]. The Hippocratic physicians state that abdominal abscesses suppurate less frequently than the abscesses that exist in the hypochondrium (note that “hypochondrium” was the area between the umbilicus and the lower ribs). If the abscess exists for a long time in the hypochondrium, suppuration should be expected. Abscesses of this site were divided in those suppurating outside the body and those suppurating within the body. The first ones have a far better prognosis, especially if they are small, since they simply terminate the acute phase. Large and wide abscesses that do not decrease in size have a very bad prognosis. Among those abscesses suppurating within the body, the ones with a better prognosis are the asymptomatic ones, such as those being painless and those not altering the skin complexion. The best possible pus is white, homogeneous, smooth, and without any bad odor. The worst one has the opposite characteristics [2].

Archigenes of Apamea, a physician of the 1st century AD, also refers to liver abscesses. He states that the most common symptoms are fever, insomnia, loss of appetite, and rigor. The latter in particular, is considered as a sign that the abscess has ruptured, especially if it occurs during the night. The physician should provoke rupture of the abscess under controlled conditions, in order to avoid serious damage that may occur if the abscess ruptures on its own. He should use cataplasms with linosperm and barley mixed with resin, manna, pitch, roots of marshmallows, pigeon’s and goat’s dung. Furthermore, the patient should drink a concoction made of sponge,

absinth, abrotonon, kentavrion etc. If the cataplasm and the concoction start to have a beneficial effect, pain soothes and all symptoms appear milder. When the time of the rupture approaches, pain increases again. The doctor should then facilitate the rupture using superficial cataplasms and acrid, warming beverages, such as those made of pepper and smyrnion. After the rupture, the fluid flows either in the abdomen or in the urine.

Archigenes mentions that some believed that the fluid may also flow in the stomach, but such an outcome could prove to be extremely dangerous. The fluid is sometimes black and sometimes white; the latter gives an excellent prognosis for the patient. If fluid from the ruptured abscess exists between the peritoneum and the intestines, the cure is easy: a sidelong incision should be performed over the groins as soon as possible; then the physician should either drain the fluid, if possible, or place medicaments in the area, so as to achieve absorption of the fluid.

The physician should also take care of the liver after the rupture of the abscess. He should first place emollient and drying cataplasms, such as the one called ikesios (composed of litharge, aged oil, vinegar, pine bark, atraktylis, petty spurge, hypocist, propolis, smyrnion, calaminth, pyrethrus and incense), or those made of willow. If the fluid flows through the urine, the physician should use similar cataplasms, placed on the groins and on the pubic area; then, he should promote diuresis with diuretic foods and drinks, such as watermelon, fig, grapes, cinnamon, maion, wine from Santorini, milk etc. If the fluid is directed to the intestine, the physician should make sure that the abdomen is neither empty nor too moist, by using foods, medicaments, cataplasms, and enemas. If the fluid is egested through the mouth, the consumed food should be acrid and light, the wine should be thin and nice-smelling and cataplasms made of dates and grapevine flowers should be applied [3]

Galen (2nd century AD) refers to abscesses only in general terms. He believes that they are conditions where a part of the body has a void, filled with some fluid. For those abscesses existing right under the skin, the diagnosis is simple, just by probing the area, while the treatment is easy as well. On the other hand, if the abscess exists in the inner organs, the physician may diagnose correctly by palpating, i.e. applying pressure on the afflicted area, which should be soft. Prognosis differs according to the etiology of the abscess [4]. Finally, the rupture of an abscess may cause serious problems, especially if the pus heads to the stomach, the thorax or the umbilicus. If a surgeon opens an abscess in his attempt to drain the pus, the patient will faint [5].

Aretaeus, during about the same time period as Galen, deals with liver abscesses on a more extensive basis. He first mentions that the liver is a very important organ, which, if affected by some illness, may cause death. In the case that an abscess ruptures, intense and acute pain appears in the thorax and the shoulders, since the diaphragm, which confines the liver, is pulled downwards because of the weight of the fluid. Furthermore, the patient suffers from fever, rigor, and dry cough, usually producing greenish expectorations; if the patient is jaundiced, the expectorations are white. Sleep is disturbed with delusions, there is swelling below the chest or between the ribs. If oedema and pain are located below the ribs, this means that the liver is oedematous as well, due to accumulation of fluid. If the accumulation is not located below the ribs, this means that the peritoneum is afflicted; if palpation is applied, the hand then sinks into the body. Generally speaking, if the abdomen is soft, the indication is that the pus has reached the viscera or the bladder with a deadly outcome. However, if the rest of the symptoms exist but the abdomen is not soft, the physician should make an incision, otherwise the liver will be damaged from the pus and death will occur. If the doctor decides to intervene, the risk of death from haemorrhage is high, since liver bleeding is uncontrollable. Consequently, the doctor should act only if it is absolutely necessary; he should make an incision and use cauterization. If the patient after all survives, white, odourless and very thick fluid will run from the cauterized area, and his health will be restored.

If the abscess is not ruptured and the stools' smell is foul, then the liver is not working and digestion is not occurring. The patient has fever, weight loss, "small" pulse, dyspnoea, suggesting that death is close. If though, the physician manages to drain the fluid through the urine, the patient will survive [6]. The symptoms suggesting the path of the fluid are numerous. If the fluid flows through the intestines, the patient develops intense pain, watery stools, accumulation of phlegm and bile. If the fluid flows through the bladder, the patient experiences a sense of weight in his kidneys and the inguinal region, and exhibits intense diuresis. If the fluid flows in the stomach, there is nausea, loss of appetite, vomit, and severe vertigo. The latter case is considered as a very bad outcome, since this organ contributes to the function of nutrition. The physician should then reinforce this organ with foods, medicaments and correct dietary instructions [7].

For Oribasius (4th cent. AD), a sign for the existence of a liver abscess is the rigidity of the area, accompanied by fever and rigor. If the urine and the stools are "mixed with foods", or if the doctor understands that there is fluid accumulated in the abdomen, the abscess should be ruptured. The doctor should apply

a cataplasm made of linosperm, fenugreek, barley, pine resin, manna, tar, pigeon and goat dung [8]. As for the treatment of an abscess in the liver or spleen, Oribasius suggests the performance of incision or cauterization. The incision should be made in the peritoneum; if the accumulation of fluid is in abundance, two handles should be passed through the lips of the incision. The physician should open the abscess and remove the fluid with a soft sponge. If the abscess ruptures on its own, the fluid flows under the peritoneum and spreads through the viscera the physician should puncture the area. If the quantity of the fluid is assessed to be small, he should make a small incision in the area; as soon as he finds the opening to the viscera, he should widen it and place a sponge [9].

Theophilus Protospatharius, a physician of the 7th century AD, only suggests that if intense urination occurs, lasting for more than three days, this is a sign of a ruptured liver abscess; in case the urination lasts for more than this, its cause lies elsewhere [10].

Paulus Nicaeensis, a physician of the 7th-10th century AD, briefly discusses the subject of liver abscesses. He states that the symptoms of a liver abscess are inflammation, pain, fever, tremor, paleness of the body and emaciation. In case the abscess ruptures, the fluid passes through the urine, which has the appearance of faeces; if the patient is lying down, there is a boiling sound indicating the presence of the rupture. The doctor has to administer diuretics, so as to help excretions get through, while particular diet should also be used [11].

DISCUSSION

Nowadays, it is known that a liver abscess may be either pyogenic, or amebic and that pyogenic liver abscesses are caused by bacteria and fungi and usually result from intraperitoneal infections. The main symptoms are high fever, rigor, general weakness and usually coexistent portal phlebitis. Amebic liver abscesses are caused by the parasite called *Entamoeba histolytica*. The main symptoms of amebic abscess are fever, pain in the right upper quadrant of the abdomen, weight loss, rigor, nausea, diarrhoea, cough, hepatomegaly, tenderness over the liver or over the ribs, and jaundice. It should be noted that the parasite also causes amoebic colitis. An extra-intestinal infection is caused when trophozoites in amoebic colitis enter the circulation. Since the liver is a definitive organ filtering the portal circulation, liver abscess is the most common extra-intestinal manifestation of amebiasis (12). Furthermore, it should be noted that it is not unusual for patients to have concurrent amoebic colitis with amoebic liver abscess [13]. Among the symptoms of pyogenic liver abscess

are chalk-coloured stools, dark urine, fever and chills, loss of appetite, nausea and vomiting, abdominal pain, jaundice, and weight loss [14]. Fever is a common symptom for both types, while jaundice is more common in pyogenic. Furthermore, patients with amoebic abscess have a higher incidence of right upper quadrant tenderness [15].

It is obvious that the ancient authors described both types of liver abscesses, with or without concurrent colitis, since they refer to symptoms, such as fever, insomnia, lack of appetite and dyspnoea. Also, the microorganism's nature was not known at the time, a kind of knowledge that could have led to different ways of diagnosing, differentiating the nature and coping with abscesses, than simply trying to drain the affected area from the accumulated fluids. However, it seems that this practice probably saved many lives under certain circumstances.

Today, 2-7% of amoebic liver abscess develop complications due to rupture [16]. All ancient authors refer to this complication. They mention that generally the patient may have rigor, intense and acute pain, sense of weight in the kidneys, cough and oedema in the area. A prognostic sign of the rupture of a liver abscess was for the ancient authors the direction of the pus in the body, while the colour of the pus was of great importance as well. White and clean pus was giving hope to the doctors while dark-coloured and foul pus was signalling the death of the patient. The symptoms described by the ancient authors suggesting the area where the fluid was heading are numerous. If the fluid flows through the intestines, there is intense pain, watery stools, phlegm and bile. Today, this could be the case of an amoebic liver abscess rupturing into the biliary tree, where the liquid is contained flows through Vater's tubercle to the duodenum [17]. The authors also describe rupture of the abscess and flowing through the bladder, where there is a sense of weight in the kidneys and the inguinal region, and intense diuresis. This could be the rare case of rupture of the kidneys, usually the right one [18]. There is also the reference of the fluid flowing in the stomach, where there is nausea, loss of appetite, vomits, and intense vertigo. Here, the rare case of rupture of the stomach may be described [19]. We should note that even for the ancient doctors, the perforation of the stomach was considered to be a very severe outcome. The ancient authors also insist on the case of a ruptured abscess where the fluid flows under the peritoneum and spreads through the viscera, or as mentioned, "between the peritoneum and the intestines". This could of course be the case of peritonitis, the second most common complication of amoebic liver abscess after pleuropulmonary amebiasis [20,21].

Finally, the Greco-Roman authors refer to the case where the fluid flows in the thorax, which could be the case of perforation of the pleural cavity [22].

As far as treatment is concerned, it is of importance to note that the ancient authors refer to two methods of draining the pus that are used even nowadays; they made an incision and placed a sponge for the absorption of the fluid or they used paracentesis, in the case of larger quantities of pus.

Based on the ancient texts, it seems reasonable to believe that ancient physicians did their best to cope with such severe cases caused by liver abscesses. Due to the circumstances, the facilities and knowledge of the time it is also reasonable to believe that they could not have done any better. The ancient physicians dared to perform difficult and dangerous surgery that in many cases might have been successful.

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SAŽETAK

Cilj: Ovaj rad predstavlja apscese jetre onako kako su prikazivani u starogrčkoj i grčko-rimskoj literaturi. **Metode:** Brojni spomeni ove pojave mogu se naći u spisima Hipokratskih liječnika (V. st pr. Kr.), Arhigena iz Apameje, Galena (II. st), Aretej iz Kapadokije (II st.), Oribazija (IV. st.), Teofila Protospatara (VII. st.) i Pavla Nicejskog (VII.–X. st.). **Rezultati:** U većini su slučajeva predstavljene kliničke manifestacije, prognoza i metoda tretiranja. U svim antičkim spisima koje smo proučavali, puknuće apscesa jetre je također dio glavne teme. Točnije, put koji će tekućina slijediti nakon puknuća se smatrao glavnim prognostičkim čimbenikom, odnosno ako je tekućina “otekla u želudac”, pacijent bi svakako umro. **Zaključak:** U ovom se radu također pokušalo načiniti korelaciju antičkih opisa sa suvremenim medicinskim entitetima, kao što amebni ili piogeni apsces jetre.

Ključne riječi: povijest medicine; grčka i grčko-rimska medicina, povijest jetre, apsces jetre.