DIAGNOSIS AND TREATMENT OF LIVER ABSCESES

Ivanov K., V. Ignatov, N. Kolev, A. Tonev, D. Hristov, S. Konsulova,
B. Balev*, R. Madjov**.

*Department of General and Operative Surgery, *Department of Imaging Diagnostics,
**Department of Hepato-Biliary Surgery, University Hospital "St. Marina" - Varna, Bulgaria*

Reviewed by: Assoc. Prof. R. Radev, MD, PhD

ABSTRACT

Pyogenic abscesses are rare and difficult problem for modern surgery because of the high mortality rate. After the 70s of the last century the introduction of new image methods as ultrasound diagnostics, percutaneous and direct cholangiography and biliary drainage, guided aspiration, and percutaneous drainage of the abscess cavity dramatically changed both the diagnosis and treatment of these patients. The routine diagnostic methods are ultrasound and CT scan. Percutaneous aspiration and drainage under ultrasound or CT control is applied as first-line treatment of hepatic abscesses.

Keywords: liver, abscess, CT, ultrasound, percutaneous drainage

INTRODUCTION

Pyogenic abscesses are rare and difficult problem for modern surgery because of the high mortality rate. In the first 3 decades of the last century the most frequent reason for that kind of disease - the pylephlebitis, caused by appendicitis, in 75-80% of cases was the main reason for death. The most frequent cause for hepatic abscesses in the later periods of last century to nowadays were the benign and malign obstructions of biliary tree, which caused multiple abscesses with total mortality about 45-50%. After the 70's, with introducing of the methods for imaging diagnosis as ultrasonography, percutaneous and endoscopic cholangiography and biliary drainage, directed aspiration and percutaneous drainage of abscesses's cavities. The diagnostics and treatment of such cases have changed dramatically. At the same time more aggressive operative and non operative approaches for treatment of hepatobiliary and pancreatic neoplasm led to increasing the frequency of pyogenic hepatic abscesses as well as penetration of the infection to the liver on the way of hepatic arteria.

AIM

The aim of this study is to follow-up the epidemiology, ethiology, bacteriology, diagnosis and treatment of hepatic abscesses in patients, treated in University Hospital "St. Marina", Varna.

MATERIAL AND METHODS

In University Hospital "St. Marina" for a period of 5 years /2002 to 2006/ were treated 47 patients with pyogenic

hepatic abscesses, distributed in groups of age and sex as follows:

Table 1 Distribution of the patients with hepatic abscesses in groups of age and sex.

	2002	2003	2004	2005	2006	Total
Male	5	4	6	10	2	27
Female	2	1	3	9	6	21

The median age of the males was 44.4 years, and the median age of the females was 64.7 years.

RESULTS

In the past years the median age of male patients with hepatic abscesses decrease. В последните години средната възраст на пациентите с чернодробен абсцес намалява. The proportion male/female without statistical significance is with male prevalence.

Ethiology

In dependence of the way of infection's spread, the hepatic abscesses have an ethiological classification in 6 groups:

- Through the biliary ducts
- Through the portal vein
- Direct penetration of the agent
- By trauma
- Through the hepatic arteria
- Cryptogenic abscesses

The cholangiocarcinoma is the most frequent reason for malign obstruction in the past years. [30] The usage of internal

biliar stents in such patients has reflection. The hepatic metastases are other frequent cause for presence of pyogenic process. The hepatic arteria become a source of infection in the past years, because the increasing of immunosuppressed patients and the arterial embolisation. [5,14].

The percent of patients with reduced hepatic function has dropped, probably because the increased frequency of the abscesses in patients with biliar stents. [14].

Diagnosics

Routine methods for diagnosis are the ultrasonography and CT. The cholangiography remains important diagnostic tool for 30-40% of the patients. [14].

The CT is with highest sensibility - 93%. That method could find abscesses with 0.5-1.0 cm in size and that make this method more sensible then ultrasonography (83%). The cholangiography is indicated 2/3 of hepatic abscesses, originated from biliary ducts. Radionucleoid examination of the liver and Ro-graphy of abdomen are less sensitive methods and are led away from the practice for diagnosis of hepatic abscesses.

Microbiologic investigation

Results for the microbiological agents could be attained by taking a puncture from the hepatic cavity, biliary ducts and hemocultures. The results from the puncture and bile ducts usually are positive, while only 55-60% of the hemocultures have bacterial growth. [14].

Table 2. Distribution of microbiological agents

	Puncture	Hemoculture	Bile
Biopsy	88	82	50
Positive	97	56	84
Anaerobs	25	32	15
Resistent agents	25	10	37
Fungi	22	11	37

According to the data in the literature, the most frequent agents are *E. coli*, *Klebsiella*, *Streptococcus spp.*, as in the past years we can observe a tendency for decreasing the infections with *E. Coli*, and increasing the infections caused by *Klebsiella*, *Streptococcus spp.* and *Pseudomonas*. A reason for this is the usage of stents. The significant increasing of the fungi infections is connected with usage of wide-spectered antibiotics in patients with biliary drainage in which there are often expression of cholangitis. From the anaerobic microbes the most common isolated are *Bacteroides spp.*, *Clostridia*, *Streptococcus spp.* [3,6,34]. The most common agents causing hepatic abscesses in the University Hospital "St. Marina" - Varna are *Ps. aeruginosa*, *E. coli*, *E. Faecalis*, *Serratia spp.* All microbiologic agents were resistant to mass-applied beta-lactams. We have observed bacterial sensitivity to fluoquinolons, aminoglycosides, and some of the bacterial

strains are sensitive to macrolides and the strategic antibacterial drugs - carbapenems and cephalosporins (3 and 4 generation).

Treatment

In approximately 35% of the patients worldwide drainage of abscess cavity is needed. The percutaneous drainage is applied as first step in the treatment in 45% of the patients. In a small per cent carefully selected patients percutaneous aspiration without drainage is applied. [13,14,32,33].

In the surgical clinics in University Hospital "St. Marina" - Varna as a method of choice in the treatment of hepatic abscesses is the application of percutaneous aspiration and drainage placement under ultrasonographic or CT control and eventual lavage of the abscessic cavity after the aspiration. In single cases with selected patients with small sized abscesses aspiration of the cavity content without drainage placement is adequate. After that strict control of the cavity using the US or CT methods must be applied.

In all cases with hepatic abscesses we have applied parenteral and antimicrobial treatment, which started with wide-spectered antibacterial combination and after identification of bacterial agent and his antibacterial sensitivity adequate drug therapy was prescribed.

Mortality rate and the risk factors that increase it.

The mortality, connected to hepatic abscesses decreases because of the multiple abscesses mortality drop. Increasing of mortality is observed only in through-hepatic arterial-penetrated infections. [14].

The risk factors connected with significant increase of mortality rate are [24]:

- Multiple abscesses
- Concomitant malignant disease
- Jaundice
- Hypoalbuminemia
- Leucocytosis
- Bacteremia
- Fungal infection
- Septic shock

CONCLUSION

1. The frequency of hepatic abscesses is increased mainly because of the aggressive approach in treatment of hepatobiliary and pancreatic neoplasms.
2. The application of biliary stents changes bacterial flora in hepatic abscesses and the application of wide-spectered antibiotics in these patients leads to mixed bacterial infection and fungal infection.
3. The advantage of image diagnostic methods improves the diagnoses. The development of percutaneous drainage under CT control contributes to significant decrease of the mortality.
4. The biliary tract obstruction and particularly the obstruction of malignant processes is the most common

reason of hepatic abscesses. Biliary drainage in patients with malignant biliary tree obstruction improves the survival rate in patients underwent palliative or radical operation. In these patients, however the hepatic abscess is more rarely appeared with pain and normal hepatic function is observed.

5. There is an increase of the patients with hepatic metastases in which embolisation of hepatic artria is applied, also increased are the patients with heavy immunosuppression in which hepatic abscesses was developed. [5,7,16].
6. The development of US and CT diagnosis contributes improvement of diagnostic approaches to many diseases. These examinations make easier the early diagnosis of pyogenic abscesses and the application of percutaneous drainage and in that way improve the patients' prognosis. CT is diagnostic method of choice. MRI could be used for the adequate diagnosis, too. But using CT can increase the examination duration, also the high price and the lack of possibility for percutaneous drainage limitates the application of this method. [21].
7. The importance of anaerobic bacteria is noticed for a long time. Our data showed that there is no significant change in the frequency of hepatic abscesses caused by anaerobic bacteria during the past years. However, the appearance of abscesses from multiresistent and mixed bacteria is comparatively new phenomenon. It is connected with comaratively high number of patients with biliary stents, recidiving cholangitis and multiple antibiotic treatments. The fungal superinfection that is noticed in patients with malignant blood diseases is in significance. [5,7,18].
8. The application and improvement of percutaneous biliary drainage during the past decade changes significantly the treatment of patients with hepatic abscesses. Antibacterial therapy combined with percutaneous drainage gives excellent results. [5,8,16,36,38]. The application of percutanepus drainage is most appropriate for solitary hepatic lesion. The multiple abscesses caused by biliary tree obstruction could be treated by percutaneous drainage of the biliary ducts. Percutaneous and open drainage are most commonly known as additional each others methods and the last one is applied in cases that the first one had not given success, as well as in patients that surgical intervention is needed because of other occasion. Indications for operative treatment are the multiple abscesses and the therapy with corticosteroides in patients with ascites.
9. The combination of percutaneous aspiration and antibacterial treatment is appropriate only in small number of cases of small solitary hepatic abscesses and precise image control. [7,11,36].

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