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E.Yu. Bababeyli
Nakhichevan State University, Nakhichevan, Azerbaijan

THE CHOICE OF THE METHOD OF TREATMENT OF ABDOMINAL ABSCESSES IN ADULT PATIENTS

e-mail: med_avtor@mail.ru

The results of a comparative study of 326 patients who underwent various types of surgical treatment of abdominal abscesses in 2014–2022 were evaluated. Abdominal abscesses develop after various kinds of inflammatory pathologies, especially peritonitis. 178 patients (54.6 %) in the main group were treated with invasive methods, and 148 patients (45.4 %) in the control group were treated with open methods. The results in both groups were investigated. In the main group, the indicators of recovery time increased by 1.9±1.2 times, and complications, relapses and mortality decreased by 1.7±0.8 times, 1.2±0.6 times and 1.1±0.4 times, respectively. The results of invasive methods, compared with open methods, are relatively simple, easy, financially cheap, convenient for patients and more effective. Treatment consists in drainage, surgical or percutaneous, the effectiveness of percutaneous drainage of abdominal abscesses reaches 74–96.4 %

Key words: abdominal abscess, laparoscopy, aspiration-puncture under CT and ultrasound control, biopsy, drainage, catheterization.

Е.Ю. Бабабейлі

ВИБІР МЕТОДУ ЛІКУВАННЯ АБСЦЕСІВ ЧЕРЕВНОЇ ПОРОЖНИНИ У ДОРОСЛИХ ПАЦІЄНТІВ

Оцінено результати порівняльного дослідження 326 хворих, яким було проведено різні види оперативного лікування абсцесів черевної порожнини у 2014–2022 роках. Абсцеси черевної порожнини розвиваються після різноманітних запальних патологій, особливо перитоніту. Інвазивними методами лікували 178 пацієнтів (54,6 %) у основній групі, а 148 пацієнтів (45,4 %) у контрольній групі – відкритими методами. Досліджено результати в обох групах. В основній групі показники часу одужання збільшилися в 1,9±1,2 рази, а ускладнень, рецидивів та летальності зменшилися в 1,7±0,8 рази, в 1,2±0,6 рази та в 1,1±0 ,4 рази, відповідно. Результати інвазивних методів порівняно з відкритими відносно прості, легкі, фінансово дешеві, зручні для пацієнтів і більш ефективні. Лікування полягає в дренажі, хірургічному або черезшкірному, ефективність надшкірного дренування абдомінальних абсцесів досягає 74–96,4 %.

Ключові слова: абсцес черевної порожнини, лапароскопія, аспірація-пункція під контролем КТ та УЗД, біопсія, дренування, катетеризація.

Qualitative diagnostics and the choice of the optimal variant of the surgical aid in patients with postoperative abdominal complications (PAC), which directly determine the results of surgical treatment, are one of the most pressing problems of modern surgery [2, 5].

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The importance of this problem is also confirmed by the fact that currently a significant increase in the number of surgical interventions performed in abdominal surgery leads to an increase in the number of postoperative complications [9, 14].

One of the frequent complications of inflammatory diseases of the abdominal cavity, which give high mortality, are intra-abdominal abscesses (IAA). They develop in 20–25 % of cases with urgent pathology of the abdominal organs. Currently, puncture-drainage interventions under ultrasound control are the "gold standard" in the treatment of IAA [4, 15].

This type of surgical aid has a number of significant advantages over traditional methods of treatment of intraabdominal abscesses. The advantages of minimally invasive methods of treatment in comparison with traditional surgical interventions include low traumatism, low postoperative mortality, no risk of general anesthesia, reduction of the patient's hospital stay [4, 10].

With intra-abdominal abscesses, surgical tactics provide for opening and adequate drainage of the abscess cavity. The choice of the method of opening and drainage of the abscess: puncture drainage, autopsy during laparoscopy or laparotomy, depends on the results of imaging diagnostics [3, 10,12].

For the treatment of intraperitoneal abscesses, the choice of surgical correction method depends on the method of verification of the abscess during ultrasonography, laparoscopy; localization of purulent accumulation: attached to the wound, in the pelvic cavity, subhepatic, inter-intestinal; complexity of the configuration of the abscess: single or multiple cavities, ulcers of several localizations [4].

With extra- or intra-abdominal abscesses of no more than 10 cm, the optimal method of intervention is puncture drainage under ultrasound guidance [7].

Percutaneous drainage of liver abscesses under ultrasound control is advisable to carry out not only with single abscesses, but also with a larger number of them. The possibility of simultaneous drainage of liver abscess and bile duct has been proved. Percutaneous drainage of liver abscess, drainage of biliary tract and laparoscopic surgery are complementary components of minimally invasive surgical intervention in the treatment of liver abscesses of biliary origin. When abscesses are localized in the marginal segments of the liver, laparoscopic atypical resection of the liver with an abscess is most appropriate [1]. Percutaneous catheter drainage (PCD) is more effective than percutaneous needle aspiration (PNA) and can be used mainly in the treatment of both amoebic and pyogenic liver abscesses along with systemic antibiotics. However, PNA can serve as a secure alternative when PCD is unavailable [13].

Despite the many proposed methods of rehabilitation, in 5–8 % of cases, the effect of treatment remains unsatisfactory. In this regard, the search for new effective types of sanitation of intra-abdominal abscesses after drainage under ultrasound control is justified [8,10, 11].

The purpose of the study was to improve the results of treatment of abdominal abscesses by using minimally invasive interventions under the control of laparoscopy, ultrasound and computed tomography.

Material and methods. In the research work, the data of 326 patients who received various types of surgical treatment for purulent abscess of the abdominal cavity in 2014–2022 at the Department of Radiology of the Faculty of Medicine of Kocaeli University (Turkey), at the Scientific Center of Surgery named after Academician M.A. Topchubashova (Azerbaijan, Baku) and in the surgical department of the hospital of Nakhichevan Autonomous Republic (Azerbaijan).

192 (58.9 %) patients were women, 134 (41.1 %) men. The average age was 52.2 ±16.7 years. There were 178 (54.6 %) in the main group, 148 (45.4 %) in the control group.

Abdominal abscesses were eliminated by open and minimally invasive methods. The evacuation of the abscess cavity was carried out using a disposable trocar needle of caliber 18–22.

Interventions are tried a maximum of 2 times, if they do not give results, you should abandon the third attempt of intervention and install a catheter for permanent drainage. In the treatment of purulent abscesses of the abdominal cavity, indications for minimally invasive methods of treatment depend on the nature, localization and volume of the pathological process. In recent years, minimally invasive methods have been widely used in the treatment of purulent abscesses of the abdominal cavity.

Various types of minimally invasive methods were used in the treatment of abdominal abscesses in the main group. We achieved a high effect using mainly the laparoscopic method – 102 cases (57.3 %) and the Seldinger method – 43 (24.1 %). Also used: stiletto catheter drainage – 9 (5.1 %); nasobiliary drainage (NBD) – 3 (1.7 %) for cholangiogenic abscesses; endoscopic ultrasonography (EUS) of the pancreas – 6 (3.4 %); endoscopic retrograde cholangiography (ERCG) of the gallbladder and bile ducts – 8 (4.5 %). When eliminating intra-abdominal localized abscesses, laparoscopic method was mainly used, purulent, pyelophlebotic (formed due to the portal vein of the liver) and other abscesses, drainage or catheterization under the control of CT and USM is recommended.

Intrahepatic, subhepatic and subdiaphragmatic abscesses accounted for 99 (66.9 %) cases in patients of the control group and 115 (764.6 %) in patients of the main group, i.e. more than half of all abdominal abscesses. Pelvic abscesses were observed in 22 (14.9 %) patients in the control group and in 28 (15.6 %) in the main group. In the control group, abscesses were observed in the spleen -8 (5.4 %) cases, in the gallbladder and biliary tract – 4 (2.7 %), in the pancreas – 3 (2.1 %), interstitial abscesses – 12 (8.1 %); in the main group: spleen – 14 (7.9 %) cases, gallbladder bladder and biliary tract – 5 (2.8 %), pancreas – 6 (3.4 %), intestinal abscesses were absent in this group.

Needles manufactured by Minimally Invasive Minimal Technologies were used for puncture. These needles have a caliber of 18 G, a 90° bevel at the distal end and laser marking, as well as round divisions on the mandrel to improve the visibility of the needle on ultrasound.

When the abscess size was more than 10 cm, aspiration-washing was performed using two drains.

The data on the studied parameters were analyzed by the method of variational statistics. In statistical analysis, the average quantity (M) and the standard error of the average value (m) are determined. The statistical significance of the difference between the two compared values is determined based on the criterion of the reliability of the difference in the value t. When testing statistical hypotheses, the limit of possible errors was 0.05.

Results of the study and their discussion. The main causes of abscess formation in various parts of the abdominal cavity are preoperative, intraoperative and postoperative complications, intra-abdominal pathology and abdominal injuries (Table 1).

In the control group, 148 patients underwent open operations (laparotomy), the abscess cavity was removed and drained after appropriate procedures. In the control group, 12 patients had purulent discharge from the abscess cavity (fistula), 6 – bile discharge, 9 – peritonitis, 4 – internal bleeding, 2 – right–sided, 1 – bilateral pneumonia, 4 – right-sided pleurisy, 1 – bilateral pleurisy, 6 – displacement drainage, drainage output – in 2, relapse was observed in 8 and fatal outcome in 5 patients. The duration of the patients' stay in the hospital was 16.5±2.6 bed days. In the main group, there were: 8 cases of purulent effusions (fistulas), 4 – bile effusions, 7 peritonitis, 6 internal bleeding, 2 cases of right–sided pneumonia, 1 – bilateral pneumonia, 3 right-sided, 1 bilateral pleurisy, 5 – displacement of drains, 2 drainage outlets. The length of stay of patients in the hospital was 7.2±0.8 bed days. In the control group, 47 patients had various complications (31.8 %), 8 relapses (5.4 %) and 5 deaths (3.4 %). In the main group, complications of various types were observed in 39 (21.9 %) patients, relapse in 5 (2.8 %) and death in 2 (1.1 %).

Table 1

Factors causing the formation of abdominal abscesses

Factors	Groups			
	Main (n = 178)		Control (n = 148)	
	n	%	n	%
Preoperative complications	24	13.5	17	11.5
Complications during surgery	21	11.8	15	10.2
Postoperative complications	72	40.5	66	44.6
Blunt abdominal injuries	33	18.5	29	19.6
The outflow of the contents into the abdominal cavity	10	5.6	7	4.7
Foreign bodies	2	1.1	3	2.1
Purulent echinococcal cysts	12	6.7	8	5.4
Abscesses of unknown etiology	4	2.3	3	2.1
Total	178	100	148	100

In the main group, various types of minimally invasive methods were used in the treatment of abdominal abscesses. Abscesses with a diameter of 5 cm or less were found during aspiration biopsy in 66 (37.1 %) patients and more than 5 cm in 112 (62.9 %) patients. Abscesses with a diameter of 5 cm or less were subjected to percutaneous puncture drainage and catheterization for the first (n = 48), second (n = 14) or third (n = 3) times. Abscesses with a diameter of more than 50 mm were successfully operated on for the first (n = 96), second (n = 14) and third time (n = 2). If the intervention failed more than 2 times, treatment should be stopped on the third attempt and a catheter should be installed for continuous drainage. Comparative results of various types of complications observed in the main and control groups are presented in Table 2.

Table 2

Comparative outcomes of complications

Complications	Control (n = 148)		Main (n = 178)	
	Quantity	%	Quantity	%
Leakage of pus (fistula)	12	8.1	8	4.5
Peritonitis	9	6.1	7	3.9
Bile leakage	6	4.1	4	1.7
Pneumonia	3	2.1	3	1.7
Pleurisy	5	3.4	4	2.3
Bleeding	4	2.7	6	3.4
Drainage displacement	6	4.1	5	2.8
Drainage outlet	2	1.4	2	1.1
Relapse	8	5.4	3	2.8
Lethality	5	3.4	2	1.1
Total:	60	40.5	46	25.8

The total number of complications was 46 (25.8 %) in the main group and 60 (40.5 %) in the control group. The criteria for successful treatment are scarring of the focal derivative, absence of pathology during CT and ultrasound, reduction and disappearance of the abscess cavity. The results obtained in both groups were investigated from a scientific point of view. The treatment effectiveness indicators were determined based on the analysis of clinical, laboratory, anamnestic, CT, ultrasound, X-ray studies and anamnesis.

In the main group, patients were divided into two groups: with single 127 (71.4 %) and multiple 51 (28.6 %) abscesses. Single and multiple abscesses in the main group were treated with various minimally invasive methods, the abscess cavity was cleaned with antiseptic solutions. Antibiotics continued to be administered for 7–10 days in the morning and evening intravenously or intramuscularly. Comparing the results of traditional and developed methods of treating abscesses, the following treatment indicators were studied: treatment effectiveness, mortality, the rate of abscess obliteration, the time from the beginning of drainage to drainage removal and the time from the beginning of drainage to discharge from the hospital. The rate of obliteration of the abscess is calculated by changing the area occupied by the abscess on a fistulogram made under standard conditions.

The duration of hospital stays in patients treated with modern methods is shorter than with open methods. The rate of recovery is high, and the frequency of complications, relapses and deaths is low. The immediate and long-term results of the studies were evaluated and showed that, in the main group in 132 patients (74.2 %), the abscess cavity was completely resolved, in the control group, treatment was successfully completed in 88 patients (59.5 %), the results are good. In 39 (21.9 %) patients of the main group and in 47 (31.8 %) of the control group, the abscess area was reduced by more than 70–80 %, the result is satisfactory. In 5 patients (2.8 %) in the main group, in 8 (5.4 %) in the control group, the abscess cavity decreased by less than 50 %, that is, a relapse was formed, the result was unsatisfactory. The fatal outcome was observed in 2 (1.1 %) patients of the main group and in 5 (3.4 %) patients of the control group, the result was assessed as poor.

According to the literature, among surgical interventions, percutaneous drainage of liver abscesses is of predominant importance, however, it has a number of disadvantages, among which are the following blockage of drainage, inadequate drainage, the occurrence of bleeding, pneumothorax, the impossibility of simultaneous drainage of the abscess and correction of biliary pathology as the main etiological factor [8].

To assess the effectiveness of treatment, both a retrospective and a prospective analysis of the documentation of 455 patients with simple kidney cysts was performed. Percutaneous drainage operations performed in 402 (88.4 %) patients followed by 96 % ethanol sclerotherapy proved to be an effective method of treating progressive (>6 cm) and symptomatic simple kidney cysts. Simple kidney cysts of category II according to Bosniak are characterized by a significant increase in drainage time. Symptomatic parapelvical, multicameral, intraparenchymatous (Bosnian category IIF-III) and complicated (Bosnian category IV) simple kidney cysts should be the subject of “open” surgical treatment [14].

It was found that the clinical picture and laboratory parameters are of secondary importance in determining the etiology and level of obstruction of the biliary tract. For differential diagnosis of etiological factors of mechanical jaundice, noninvasive and minimally invasive radiological methods were used: ultrasound examination – 203, magnetic resonance cholangiopancreatography – 98, multispiral computed tomography – 74, endoscopic retrograde cholangiopancreatography – 138, percutaneous transhepatic cholangiography – 27. In order to determine the informativeness, the detection of concretions, strictures of

the bile ducts, mass lesions, expansion of intra – and extrahepatic bile ducts was evaluated. The methods of eliminating biliary hypertension were various types of endoscopic decompression, which were performed in combination with endoscopic retrograde cholangiopancreatography and percutaneous transhepatic cholangiography. The following aspects were compared: the possibility of performing these types of decompression of the bile ducts, their effectiveness in eliminating jaundice and complications. A three-stage algorithm for diagnosis and treatment was developed, the effectiveness of which in eliminating mechanical jaundice was 96.0 % [10].

In the treatment of patients with liver abscess, PCD has a higher success rate compared to PNA and leads to a faster reduction in the size of the abscess cavity by 50 % and clinical improvement. These two methods are equally safe.

Failure to reduce the size of the abscess below 50 % of the original diameter or clinical improvement after repeated aspiration was considered as aspiration failure. In the PCD group, drainage was performed with French catheters using the Seldinger technique. Drainage was considered unsuccessful if the abscess cavity did not resolve and laparotomy was required to remove pus [13], which is confirmed by our research.

It should be emphasized that when determining the tactics of treatment of abdominal abscesses, surgical and minimally invasive methods cannot be contrasted, because each of them has its own indications.

Conclusion

Thus, a comparative assessment of the treatment of 326 patients examined by us in the main and control groups showed that in the main group, recovery increased by 1.5 times, complications decreased by 1.2 times, relapses by 1.6 times, mortality by 2.5 times. The minimally invasive method of treating purulent abscesses of the abdominal cavity is quite simple, convenient, economical, characterized by small cosmetic incisions, high recovery rate, short hospital stays, low financial costs and greater efficiency compared to the open drainage method.

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