Original article:

Abdominal tuberculosis in urgent surgery

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Abstract:

Objective: This article presents retrospective analysis conducted on the basis of the General Surgery Clinic of the Irkutsk State Medical University (ISMU). ***Materials and methods:*** 165 cases of abdominal tuberculosis (AT) were detected and analyzed. The sample was made from the total number of patients who were treated in the surgical department for urgent reasons from 2009 to 2018. ***Results and Discussion:*** Proportion of hospitalized AT cases from the total number increases every year and slightly decreases only after 2013. The largest number of hospitalizations in 2013 was 29 cases or 2.1%. General characteristics are as follows: 95% of patients were 30–35 years old, 93% used drugs, 80% were HIV positive, and 88.3% suffered abdominal pain. Tuberculosis of the gastrointestinal tract with ulcer perforation was more common (53.7%). 140 (84.5%) patients had history of operation. Overall mortality was 57.6%. ***Conclusion***: The main cause of mortality was generalized tuberculosis. The contribution of these cases to the overall mortality over the period taken was not possible to estimate.

Keywords: abdominal tuberculosis, HIV infection, emergency surgery.

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Introduction

Tuberculosis (TB) is an ancient disease that once meant a death sentence. Effective anti-TB drugs first appeared in the 1940s and allowed the Western Europe, North America and some other regions of the world to reduce morbidity to very low levels. However, for most countries, complete TB elimination as an epidemic disease and one of the main public health problems is still a matter of the future[1].

Worldwide, including the Russian Federation (RF), there is an increase in the incidence of tuberculosis (ICD - A18)[2]. According to Global tuberculosis report 2018, in 2000–2017 period, Russia had the largest number of new cases registered in the period from 2007–08. By 2009, the growth rate decreased slightly, as of 2017, the incidence of tuberculosis was 84.5 0/0. To date our country is on 91st place (out of 208) in terms of TB prevalence. In many countries of the CIS, India, Pakistan, China, Hong Kong, South Korea, the situation is worse.

In Korea, abdominal tuberculosis is reported in 5% of cases. Bangladesh colleagues (33rd place) described cases of severely abdominal tuberculosis (300 cases in 2 years) without a pulmonary form or even its suspicion (cough, hemoptysis), which is extremely rarely in our country. Articles of Indian authors differ in the age range structure (21-40 comparing to 30-35 years in our study). Abdominal organs lesion are comparable similar. Also, calcification in Indian publications was noted as a rare AT complication[3-9].

Thus, the problem of abdominal tuberculosis

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remains relevant not only in Russia, but practically throughout the world.

The Siberian federal district shows higher morbidity rates, and the Irkutsk region is one with the most severe epidemiological situation, with morbidity reaching 108.3% in 2016. Every year, the proportion of unemployed persons grows among the newly diagnosed tuberculosis patients.

In Irkutsk region, 32.7% of TB patients are young people of working age (18-34 years old). Most people in this age category are HIV positive (35% in 2016)[10].

Among TB extrapulmonary forms, abdominal tuberculosis is considered a rare pathology. Difficulties in its registering are related to the fact that clinical classification (ICD-10 - A18.3) includes only forms as: tuberculosis of the intestine, peritoneum and tuberculosis mesadenitis. Other localizations are counted as "other". Moreover, in cases of AT, practically all organs of the abdominal cavity are affected [11]. Currently, extrapulmonary tuberculosis rate in Russia is 10-12%[12], of which AT rate is 2-3% [13]. In fact, AT is underestimated by official statistics. This is especially important in connection with the HIV epidemic. When providing urgent surgical care for an HIV positive patient, surgeon must keep in mind that at least 55% of patients may have a previously unidentified AT. AT is diagnosed by morphological criteria - by the presence of tuberculous granulomas (87.3%), a complex of clinical parameters using radiological, ultrasound, microbiological methods, as well as tuberculin diagnosis and trial treatment (12.7%). In ⅓ of cases, AT is diagnosed posthumously. AT patients average age is 41.2, the gender ratio of men women is 2.8:1.0[11].

Abdominal organs lesion specifies AT as mono- and multiorgan, diagnosed in 52.1 and 47.9% of cases accordingly. AT can be isolated or combined with pulmonary TB or of other extrapulmonary sites - in 33.1% and 66.9% of cases. Combinations with pulmonary TB occur in 55.8%, with TB of other extrapulmonary sites - in 15.8% of cases, including combinations in every third (28.4%) patient [11].

Considering the pathological process localization, gastrointestinal TB occurs in 44.7% of cases, TB of parenchymal organs - 32.4%, TB serositis - 27.5%, and abdominal lymphadenitis - 53.5%. When AT develops systemic and organ complications, every second patient (45.8%) they turn to get fatal[9, 14].

Study purpose: To assess AT clinical features, diagnosis and treatment of complications in urgent surgery.

Materials and methods

Retrospective results analysis of examination and treatment of 165 patients with AT was carried out in the general surgery clinic of the Moscow State Medical University in 2006-2015.

Ethical clearance statement: This research had been approved by Ethical Committee of author's universities.

Results and discussion of the study

The analyzed period showed a significant increase in AT complications AT with patients admitted for emergency care in a general surgical hospital. The maximum number of requests was noted in 2013 with no subsequent significant decrease noted (Fig. 1).

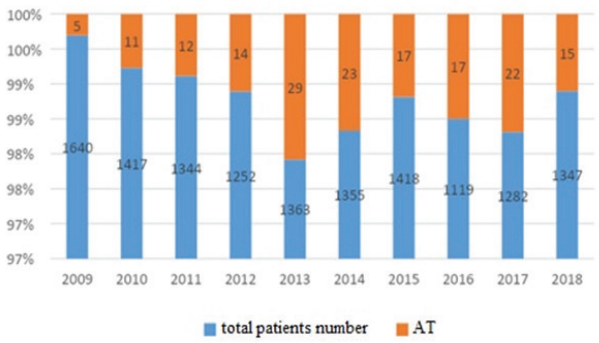

Figure 1. The dynamics of AT patient's hospitalization.

Patients with AT admitted to the general surgical hospital tended to have the diagnosis of A18 set earlier. Most of them were hospitalized with referral from the TB dispensary (55) or by ambulance (49). Less often they were appointed from other medical institutions (infectious diseases hospital - 23, therapeutic - 9, other institutions - 28, self-referral - 1). Phthisiatricians, 27 emergency doctors, and 15 infectious disease doctors referred patients to the surgical hospital more often. The reference diagnoses were different: "acute abdomen", peritonitis (23), acute appendicitis (9), hollow organ perforation (7), others (10).

All AT patients were of age range 18-66, on average age 31 (30.8-34.8; 95% CI). Number of male patients were 127 (77.0%), female - 38 (23.0%). Majority of patients led an asocial lifestyle, 132 (80.0%) patients used drugs. 137 (83.0%) patientswere HIV positive, ofwhich 100 (60.6%) acquired AIDS. HIV infection in 37 (22.4%) cases was combined with hepatitis B, in 79 (47.9%) with hepatitis C, in 39 (23.6%) - candidiasis, in 6 (3.6 %) - liver cirrhosis. In 97 (58.8%) of cases, AT combined with pulmonary TB. In 80 (48.5%) severe cachexia was noted.

Upon admission to the hospital, 146 (88.5%)

patients with AT complained of abdominal pain, 49 (29.7%) - nausea and vomiting, 35 (21.2%) - the presence of high blood pressure. 90 (54.5%) patientshadhypotension, 118 (71.5%) - tachycardia.

In laboratory studies, 100 (60.6%) patients showed anemia, 56 (33.9%) - leukocytosis, 14 (8.5%) - thrombocytopenia (platelets <100×109/l). In the study of blood biochemical parameters, 132 (80.0%) patients had hypoproteinemia, 44 (26.7%) bilirubinemia, and 42 (25.5%) azotemia. In 44 (26.7%) observations, a decrease in plasma levels of potassium (K+≤ 3.5 mmol/l) and sodium (Na+≤ 135 mmol/l) was observed.

AT patients had instrumental methods of thorax and abdomen performed. 97 (58.8%) patients had disseminated pulmonary TB on thorax X-ray, 13 (7.9%) had pneumonia, and 2 (1.2%) had cardiomegaly. In 95 cases, X-ray of the abdominal organs in a standing position was performed and revealed free gas under the dome of the diaphragm (pneumoperitoneum) in 49 cases and signs of acute intestinal obstruction ("Kloyber bowl") in 19 cases. Abdominal organs USI showed free fluid in the abdominal cavity and intestinal pneumatosis. In 35 cases laparoscopy revealed serous-fibrinous (13) and purulent-fibrinous peritonitis (8). Less commonly, a tubercular form of intestinal TB was noted with no signs of peritonitis (7) and right iliac region infiltration (5). In 2 cases, a destructive appendicitis of TB origin was noted.

About 140 (84.5%) patients were operated on due to AT. 98 of them got complications of diffuse purulent peritonitis development. The main operation indicator was the presence of clinical signs of hollow organ perforation and peritonitis.

75 operated patients got a perforation of TB ulcer of gastrointestinal tract (GIT) (Table I). In 60 patients, perforation was localized in the small intestine: in the ileum (40), in the ileum and jejunum (11), in the jejunum (9). 13 patients had a perforation localized in the large intestine: in the colon (9), in the cecum (2) and in the appendix (2). In 2 cases, perforation was localized in the stomach. In this group of patients, perforation of TB ulcer was combined with TB mesadenitis of the small intestine (23 cases) and with TB of retroperitoneal lymph nodes (11 cases).

Table I. Perforated Tb Ulcers Localization In Git In Operated Patients

Localization	Numberofpatients	
	abs.	%
Ileum	40	53,3
Ileumandjejunum	11	14,6
Jejunum	9	12,0
Colon	9	12,0
Caecum	2	2,7
Appendix	2	2,7
Stomach	2	2,7
TOTAL	**75**	**100**

In addition to the hollow organs perforation (75), in 4 cases the patients had intestinal tuberculosis complicated by bleeding (Table III). Often, during the operation, isolated tuberculous mesadenitis with or without abscess formation (16) and tuberculosis of parenchymal organs (liver (9) and spleen (14)) were detected in patients. Peritoneal tuberculosis was noted in 22 patients (Table II).

Table II. Tb Damage To The Abdominal Organs Localization In Operated Patients

Localization	Numberofpatients	
	абс.	%
GIT hollow organs with ulcers perforation	75	53,7
GIT hollow organs with ulcers bleeding	4	2,8
Mesentericlymphnodes	16	11,4
Spleen	14	10,0
Liver	9	6,4
Peritoneum	22	15,7
TOTAL	**140**	**100**

Surgical intervention volume depended on intraoperative revision: lesion extent and nature, purulent peritonitis, the patient's condition severity. Laparotomy was performed in 136 patients of of the

140 operated. In 95 cases, elimination of peritonitis causes followed, and in 41, it was of explorative nature. Affected intestinal part resection without imposing a primary anastomosis was performed in 31 cases. Resection with no primary anastomosis imposing was performed in 22. Perforated ulcer excision and suturing was performed in 14 cases, suturing of the perforated ulcer in 8. Billroth-2 operation was performed in 2 cases. Abscess mesadenitis incision and drainage was performed in 10 cases, appendectomy - in 2, splenectomy - in 6, other operations - in 4 cases. All operations ended with the rehabilitation and drainage of the abdominal cavity, including exploratory laparotomy.

Table III. Surgery For Abdominal Tb

Surgerytype	Numberofpatients	
	abs.	%
Intestinalresectionwithanastomosis	31	22,2
Intestinal resection with no anastomosis	22	15,7
Perforated intestinal ulcer excision, suturing	14	10,0
Perforatedintestinalulcerexcision	8	5,7
Billroth-2 operation	2	1,4
Appendectomy	2	1,4
Splenectomy	6	4,3
Incision and drainage of an abscesses of an abdominal cavity	10	7,1
Exploratorylaparotomy	41	29,3
Otheroperations	4	2,9
TOTAL	**140**	**100**

In 42 cases staged surgical sanitization of the abdominal cavity was required. Over 32 cases had than one relaparotomy performed. Programmed interventions volume depended on the intraoperative situation and presence of complications (insolvency of the intestinal stumps or anastomosis[14], newly occurring intestinal perforations[15] a. In programmed interventions course, abdominoscopy and abdominal cavity sanation was performed. The starting antibiotic therapy included rifampicin, ceftriaxone and metronidazole [15-17].

95 (57.6%) patients died, 51 of them were HIV positive. The main mortality cause for 75 patients was generalized TB, in 20 patients - diffuse purulent peritonitis with multiple organ failure. Competing diseases with generalized TB were: acute large-focal myocardial infarction (1), acute destructive pancreatitis (3), acute toxic liver degeneration (2), bleeding from TB ulcers (4).

Conclusions

Currently, there is a significant increase in AT patients. Most often, patients are male (77.0%) aged 30–35 years (95%), drug users (80.0%), HIV positive (83.0%) in the AIDS stage (60.6%) in combination with viral hepatitis C (47.9%) and cachexia (48.5%). The main indication for urgent surgical care is abdominal pain syndrome (88.3%). 84.5% of patients were operated. The main indication for operation is the TB GIT ulcers perforation (53.7%), isolated TB mesadenitis (11.4%) with peritonitis. An adverse prognostic AT factor is peritonitis combined with pulmonary TB and HIV infection. The overall AT mortality in the general surgical hospital is 57.6%.

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