

The Nature of Purulent-Inflammatory Diseases of the Retroperitoneal Region in Patients with Diabetes Mellitus

Babadjanov B. D., Matmurotov K. J. *, Kuchkarov A. A.

Department of General Surgery, Tashkent Medical Academy, Tashkent, Uzbekistan

Abstract Conducted a retrospective data analysis of 439 patient records with purulent-inflammatory diseases of the retroperitoneal space, receiving inpatient treatment in the department of purulent surgery of the multidisciplinary clinic of the Tashkent Medical Academy from 2010 to 2022, in order to select the observation group. All patients, along with general clinical laboratory studies, underwent MSCT and ultrasound of the retroperitoneal region before the start of the treatment complex to determine the operational tactics of treatment. At the same time, a limited pathological focus (abscess) was detected in 28.7% of cases, signs of phlegmon were noted in 51.4% of cases, and combined types or postoperative fistulas were observed in 19.9% of cases.

Keywords Diabetes, Retroperitoneal abscess, Purulent process

1. Introduction

Purulent-inflammatory diseases of the retroperitoneal region are characterized by the development of purulent-destructive processes and are accompanied by clinical and laboratory parameters. This group includes all forms of purulent processes (purulent paranephritis, abscess and renal carbuncle), festering renal cysts and hematomas, paranephritis and anaerobic phlegmon [1,10].

The main reasons for the development of this pathology can be considered treatment errors, failure to timely detect primary kidney disease and inadequate sanitation during the Initial operation. One of the main causative agents of acute pyelonephritis is *E. coli*, but in the etiology of purulent-destructive forms of pyelonephritis, the following bacteria are determined: *E. coli*, *Klebsiella*, *Proteus*, *Serratiaspp.*, *Pseudomonas* and enterococci. In this regard, it is very important to choose adequate antibacterial and antimicrobial drugs [2,9].

Up to 14% of all kidney diseases is pyelonephritis in the acute phase, while 30% of patients develop various forms of purulent pyelonephritis (apostematous pyelonephritis, abscess, carbuncle). Most frequently, purulent kidney diseases lead to a total purulent-destructive disease of the retroperitoneal space and complicate the tasks of the surgeon in terms of surgical treatment [3,4,11]. In recent years, clinical cases have been observed in surgical practice, when a purulent-inflammatory process spreads distally to the

inguinal area and thigh.

This pattern is most often observed in patients with diabetes mellitus and indicates improvements in the existing surgical standards for the treatment of such a contingent of patients [5,7].

Purulent-destructive processes in the retroperitoneal region of both the kidneys and other organs are very dangerous for the life of the patient and require special attention in determining the strategy of surgical treatment. The most formidable complication of purulent-destructive pyelonephritis is the development of urosepsis and may be the cause of nephrectomy. Nephrectomy reaches 35% due to purulent pyelonephritis. In diseases with a complicated form of urosepsis, mortality reaches 28.4-80%. For that matter, timely and high-qualified treatment is important [8].

The purpose of the study is to study clinical and laboratory indicators in the studied patients with purulent-inflammatory processes of the retroperitoneal space.

2. Materials and Methods

Conducted a retrospective data analysis of 439 patient records with purulent-inflammatory diseases of the retroperitoneal space, receiving inpatient treatment in the department of purulent surgery of the multidisciplinary clinic of the Tashkent Medical Academy from 2010 to 2022, in order to select the observation group. The age of patients among women ranged from 15 to 74 and averaged 39.7 years; among men varied from 28 to 74 and amounted to 42.5 years. The distribution of patients by sex and age is shown in Figure 1.

All patients, along with general clinical laboratory studies, underwent MSCT and ultrasound of the retroperitoneal space before the start of the treatment complex to determine the

* Corresponding author:

mj_80@mail.ru (Matmurotov K. J.)

Received: Sep. 28, 2023; Accepted: Oct. 13, 2023; Published: Oct. 21, 2023

Published online at <http://journal.sapub.org/ajmms>

operational tactics of treatment. At the same time, a limited pathological focus (abscess) was detected in 28.7% of cases, signs of phlegmon were noted in 51.4% of cases, and combined types or postoperative fistulas were observed in 19.9% of cases. Upon admission, the patients were started on empiric antibiotic therapy, and after receiving a bacteriological study, purposeful adequate antibiotic therapy was prescribed.

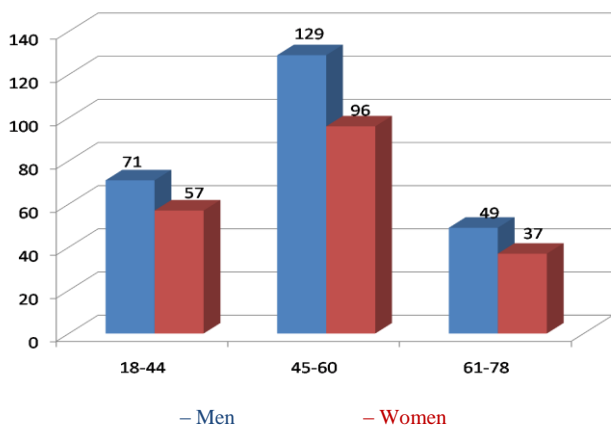


Figure 1. Distribution of patients by sex and age

Among the patients, 351 (79.9%) suffered from diabetes mellitus. All patients were consulted by an endocrinologist and appropriate treatment was recommended to correct glycemia. After a thorough examination, all patients were operated on in a planned manner on the 2nd-4th day of inpatient treatment.

The obtained data were processed by parametric methods of statistical analysis (in a normal distribution for two independent samples to compare related, dependent populations). The Student's distribution was calculated using the Excel-2010 program in order to construct a confidence interval. To identify the difference Student's test, the following differences were calculated: arithmetic mean, standard deviation of the difference, standard error of the mean difference, t - accuracy, p - significance level (probability of error); $t < 2$ ($p > 0.05$) - differences are not statistically significant; $t > 2$ ($p < 0.05$) - differences are statistically significant, at $t > 2.6$ ($p < 0.01$), at $t > 3.3$ ($p < 0.001$). Statistical processing of the results was carried out using the applied statistical program Excel-2010.

3. Result and Discussion

Among the clinical forms of purulent diseases of the retroperitoneal space, the abscesses of various etiologies were more common than others - 54.1% of those examined, secondary purulent diseases amounted to 26.7% of patients after primary operations, hematoma suppuration occurred in 9.5% of cases, a specific process (spinal tuberculosis) in 5.9%, and disintegration of the retroperitoneal tumor in 3.8% of cases (Figure 2).

Comorbidities: DM type I - 16.9%; DM II type - 63.0%; urolithiasis - 16.9%, arterial hypertension - 13.2%, coronary

heart disease - 3.8%, hepatitis B - 1.9%, hemophilia A - 1.9%. The purulent paranephritis was most commonly seen in 3.8% patients affected by complications of the underlying disease; suppuration of the postoperative wound - 9.4%, sepsis - 1.9%; 85% of patients had no complications in the postoperative period.

During conservative treatment, cardiac activity and renal function were corrected in the preoperative period, and in all cases the patients were operated on in a planned manner.

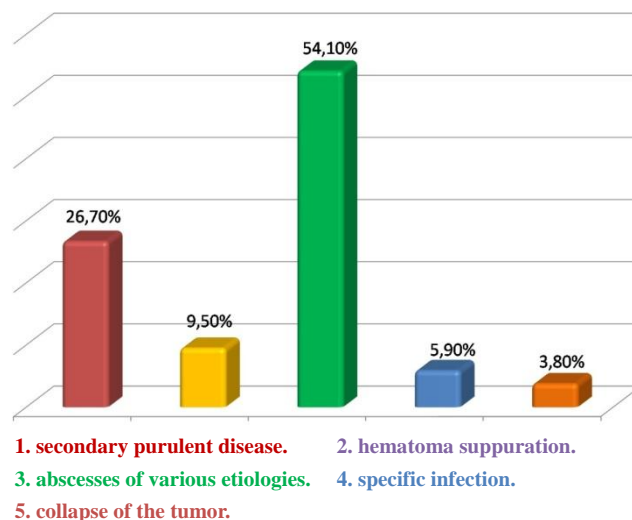


Figure 2. Clinical forms of purulent diseases of the retroperitoneal space

During evaluation of the complete blood count were found that 41 (77.4%) patients had an increased number of leukocytes, on average $6.6 \pm 0.4 \times 10^9/l$; 96.2% of patients had elevated ESR- 47.7 ± 7.2 mm/h. Based on the leukocyte formula, the leukocyte intoxication index (LII) was calculated as an indicator of tissue degradation processes, the level of endogenous intoxication (EI). In our studies, the average value of LII was: 3.4 ± 1.06 (min -0.38, max -11.4) (Figure 3).

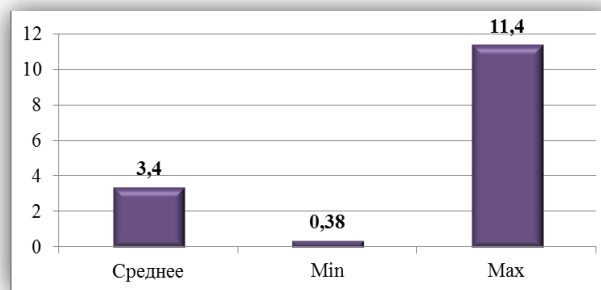


Figure 3. Leukocyte index of intoxication

The index of the ratio of leukocytes and ESR: 8.03 ± 2.0 (min - 0.38, max - 19.3). Compared with the average indicator, it has a clear upward trend, which indicates intoxication of the body associated with the inflammatory process. Lymphocyte-granulocytic index (LGI): 1.96 ± 0.42 (min-0.53 max-4.49) is lowered, which indicates infectious intoxication of the organism. In the general analysis of urine, leukocyturia was detected in 56.6%, which also indicates the

presence of an inflammatory process in the body. On the background of diabetes mellitus in patients in many clinical cases, we did not find severe leukocytosis, on the contrary, due to a reduced immune status, normal laboratory parameters were noted.

The majority of patients underwent: revision of the retroperitoneal space, autopsy and sanitation of the pathological focus, minimally invasive operations: drainage of abscesses, decapsulation of the kidney were performed in 56.5% of patients. Nephrectomy, in order to sanitize the purulent focus and save the patient's life, was performed in 12 patients (21.7%). Immunomodulators of various groups were used for immunocorrection. Antibacterial treatment was carried out with drugs: meropenem + sulbactam—38.6%, polymyxin - 13.7%, piperacillin + tazobactam - 9.1% fluoroquinolones - 38.6% after bacteriological testing for antibiotic resistance. Clindamycin (1200 mg/day) was used in all cases for the purpose of an anaerobic drug. Upon admission, patients were started getting empiric antibiotic therapy, and after receiving a response and antibiotic susceptibility, patients were transferred to targeted antibiotic therapy.

4. Discussion

The most frequently detected microflora in the study of urine culture was *E. coli*. According to the study on antibiotic resistance, *E. coli* strain is most sensitive to the following drugs: polymyxin, meropenem + sulbactam, clindamycin, piperacillin + tazobactam, amikacin. Thus, the study shows that: most often purulent-inflammatory diseases of the kidneys and retroperitoneal space were found among young people with a predominance in women;

The abscesses of the retroperitoneal area of various were prevailed among all clinical forms with 54.1%. Based on the comorbidities, type I and II diabetes mellitus was detected in 79.9%. Purulent-inflammatory diseases are the most severe in patients with type II diabetes mellitus, since the rapid progression of the purulent process complicates the treatment of the patient and the surgical approach;

laboratory studies revealed an increase in the indicators of the leukocytic intoxication index, the index of the ratio of leukocytes and ESR, the lymphocytic-granulocytic index, which indicated the intoxication of the body associated with the inflammatory process. In our studies, the average value of LII was: 3.4 ± 1.06 (min—0.38, max—11.4), ESR— 8.03 ± 2.0 (min—0.38 max—19.3), LHI: 1.96 ± 0.42 (min—0.53 max—4.49).

The main performed surgical treatment: autopsy and sanitation of the pathological focus with drainage of the retroperitoneal region. During open operations, we used a new method of drainage of the retroperitoneal space, the purpose of which was to prevent further progression of the purulent-inflammatory process along the fascia in patients with DM. As well as patients underwent minimally invasive operations: drainage of abscesses, decapsulation of the kidney was performed in 56.5%. A history of nephrectomy

was performed in 12 patients (21.7%).

Thus, in order to obtain a favorable postoperative result in patients with purulent-inflammatory diseases of the retroperitoneal space against the background of diabetes, many factors and the nature of the purulent process should be considered, since these patients have a high probability of developing fasciitis. So nowadays, the development of an adequate treatment and diagnostic algorithm in the treatment of purulent diseases of the retroperitoneal space in patients with diabetes is the main direction of modern surgery.

5. Conclusions

Purulent-inflammatory diseases of the retroperitoneal region in most cases are preceded by abscesses (54.1%) and primary surgical operations on the organs of the retroperitoneal space (26.7%). Against the background of diabetes mellitus, purulent-inflammatory diseases generally proceed latently and laboratory parameters in these patients are not clear criteria for determining the surgical tactics of treatment. In connection with the peculiarity of the clinical course of the purulent process in patients with diabetes mellitus, all factors that affect the final result in the postoperative period should be studied, and these data indicate the need for research in this direction.

Consent

It is not applicable.

Ethical Approval

It is not applicable.

Competing Interests

The authors have declared that no competing interests exist.

REFERENCES

- [1] Kadyrov Z.A. Our experience of retroperitoneoscopic treatment of purulent-inflammatory diseases of the kidneys and retroperitoneal space // *Experimental and Clinical Urology*. – 2016. – No. 1. – P. 70-76.
- [2] Alferov S.M. Purulent-destructive forms of pyelonephritis complicated by urosepsis and acute renal failure. *Urologicheskie Vedomosti*. – 2019. – T. VI. -Special issue. - S. 9-10.
- [3] Sinyakova L.A. Modern approaches to the treatment of purulent-inflammatory diseases of the kidneys // *Abstracts of the Conf. "Modern aspects of urology, oncurology"*. – Krasnoyarsk, 2020. – P. 201-202.

- [4] Styazhkina S.N. The role of comorbid pathology in surgery // Fundamental research.–2011. - No. 7. - S. 138-140. // Actabiomedica scientifica. –2019. –V.4. –No.5. – P. 26–30.
- [5] Belyalov F.I. The problem of comorbidity in diseases of internal organs // Bulletin of modern clinical medicine. -2010. -№2. -p.44-47. [9] Sinyakova L.A. The functional state of the kidneys in patients with purulent pyelonephritis // Bulletin of Urology. – 2018. -No. 6 (4). –S. 49-59.
- [6] Vertkin A.L. Comorbidity // Clinical medicine. -2012. -№10. -S. 4-11. [10] Apolikhin O.I. Analysis of uronephrological morbidity and mortality in the Russian Federation for a ten-year period (2002 - 2012) according to official statistics // Experimental and Clinical Urology. – 2014. - No.2. – P. 4-12.
- [7] Melnikov V.L. Purulent-septic complications in the urological department of a hospital (literature review) // News of higher educational institutions. Volga region. Medical Sciences.–2019. -№3(51).– P. 39-53. [11] Bratchikov O.I. Surgical tactics and treatment of purulent-destructive forms of acute pyelonephritis in pregnant women // Kursk Scientific and Practical Bulletin "A Man and His Health". –2012. -No.1. –P.43-50.
- [8] Beloborodov V.A. Empiric therapy of complicated pyelonephritis