

Difficulties of management of a pregnant patient with renal carbuncles

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ABSTRACT

Massive antibiotic therapy, even with the most powerful modern drugs, does not lead to a cure for the disease with a carbuncle of the kidney without opening and draining the purulent-necrotic focus. Establishing the diagnosis of carbuncle of the kidney provides for urgent surgical intervention.

Keywords: carbuncle, urodynamic, lobotomy, decapsulation

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INTRODUCTION

Relevance-kidney carbuncle in pregnant women is an important medical and socio-economic problem of modern society. Research shows that kidney disease complicates pregnancy and tends to increase [3]. The relevance of studying the etiopathogenetic and diagnostic aspects of kidney carbuncle in pregnant women is determined not only by its prevalence, but also by its clinical significance, in particular, the tendency to increase the disease and the development of severe complications [4, 5].

Kidney carbuncle is a purulent inflammation of the kidney caused by the fusion of small purulent foci in a limited space, with an aggressive course it breaks into the pelvis, perirenal tissues, abdominal cavity or intestines. The most common causative agents of kidney carbuncle are staphylococcus aureus and escherichia coli [6].

Renal carbuncle may occur as a primary disease due to massive bacterial invasion from a distant purulent focus. In this case, a bacterial thrombus is formed in a large blood vessel of the kidney cortex, or in several small vessels located close to each other. In addition, the development of the disease is promoted by incomplete occlusion of the embolus in the branch of the renal artery, followed by the development of infection, the process of infection at the site of its penetration into the kidney tissue, which can

subsequently lead to necrosis. The size of the carbuncle can be different in diameter. The carbuncle is most often localized in one kidney, more often in the right kidney, the symptoms of the disease are observed in its upper segment [7-9].

Treatment of renal carbuncle is surgical. The purpose of the surgery is to stop the progression of the purulent-inflammatory process in the affected kidney and prevent its occurrence in the healthy one. If there are pustules on the surface of the cortical substance, the largest of them or their accumulations are opened, and the carbuncles are dissected or excised [10].

With a timely operation, the postoperative period proceeds smoothly, the body temperature decreases and gradually returns to normal, the function of the affected kidney is quickly restored. Prevention is reduced to the elimination of foci of infection. According to modern concepts, kidney diseases during pregnancy are multifactorial, but the leading place is given to urodynamic and hemodynamic disorders that occur during pregnancy against the background of changes in hormonal status and compression factors, which disrupts the course of pregnancy, is a risk factor for intrauterine infection, maternal and perinatal mortality [11, 12].

Woman 24 years old, pregnancy 33 weeks +four days, was admitted to the Gynecology Department of the City Clinical

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Hospital (CCH) No. 7, Almaty, Kazakhstan, with complaints of acute pain in the lumbar region more on the right, fever up to 40 °C, weakness, malaise.

This condition worries for two days, when the above complaints appeared at the gestational age of 33 weeks +four days. She took one paracetamol tablet and one aspirin tablet on her own at home. On May 20, 2022, due to the deterioration of the general condition, the ambulance crew was taken her to the City Perinatal Center (CPC) with the above complaints and a sore throat. Examined in the emergency room, diagnosed with pregnancy 33 weeks +four days. Coronavirus infection is probable case. PCR was taken for COVID-19. By order of hospitalization from the CPC, she was transferred to the CCH No. 7, examined in the intensive care unit, all tests were taken, hospitalized in the gynecology department, the diagnosis was made is pregnancy 33 weeks +four days. Acute pyelonephritis.

Anamnesis of Life

The epidemiological environment is clean. She denies contact with infectious patients, has not been abroad, has not been in contact with persons from an unfavorable contingent for the coronavirus. She did not travel outside the city. She did not remove the ticks from herself. Denies insect bites. She did not swim in open water. She received the vaccine against COVID-19 in the summer of 2022, Sputnik V-2 doses. Revaccination was received by "Pfizer" in April 2022. She has no supporting document in her hands. Hepatitis A, B, C- denies. Tuberculosis- denies, skin-venereal diseases: denies. Somatic diseases- denies. Hemotransfusion: none. Injuries - denies. Surgical interventions- in 2016, appendectomy. Bad habits- denies. Allergological anamnesis: not burdened.

Objective Data

General condition at admission is severe, due to symptoms of intoxication. The skin and visible mucous membranes are pale in color. The tongue is clean and moist. In the lungs, vesicular breathing, no wheezing. Heart sounds are muffled, the rhythm is correct. Pulse is 82 beats per minute, blood pressure is 110/70 mm Hg, body temperature is 35.8 °C. The abdomen is soft, painless, enlarged due to the pregnant uterus. There is a postoperative scar according to Volkovich-Dyakonov on the anterior abdominal wall, healing by primary intention. The Murphy's punch sign is positive on both sides. Urination is free and painless. Feces is without pathologies.

Complete Diagnosis (Underlying Disease & Concomitant Complication)

Right kidney carbuncle. Apostematous pyelonephritis on the left. Anemia of mixed origin, moderate stage. Pregnancy 36 weeks. PCR for COVID-19 (21.06.2022) is negative.

Instrumental Examination

Ultrasound gynecological (transabdominal) (20.05.2022 18:10) conclusion is Pregnancy at 33-34 weeks.

Ultrasound of the hepatobiliopancreatic region (liver, gallbladder, pancreas, and spleen) (20.05.2022 18:10) conclusion is diffuse changes in the liver parenchyma. Echocardiographic features of cholecystopancreatitis. Bile stasis.

Ultrasound of the kidneys (20.05.2022 18:10) conclusion is carbuncles of the right kidney. Apostematous pyelonephritis on the left.

Ultrasound of the kidneys (07.06.2022 08:34) conclusion is echo picture of bilateral pyelonephritis. Cavitory parenchymal formation of the left kidney.

Ultrasound gynecological (transabdominal) (07.06.2022 08:34) conclusion is developing pregnancy.

Ultrasound of the kidneys (09.06.2022 08:09) conclusion is the cavity formation has decreased in size in dynamics. Signs of urosepsis in the right kidney.

TREATMENT

Amoxicillin (1,000 mg and dispersible tablet) (1,000 mg orally) (three times per day for eight days). Nadroparin calcium (0.3 ml, solution, 2,850 IU anti-Xa/0.3 ml) (0.3 ml subcutaneously) (one time per day for 10 days). Metronidazole (100 ml, solution, 0.5%) (100 ml IV) (two times per day for two days). Metronidazole (100 ml, solution, 0.5%) (100 ml IV) (three times per day for six days). Meropenem (1g, powder) (1g IV) + sodium chloride pharmedel (250 ml, IV) (three times per day for eight days). Meropenem (1g, powder) (1g IV) + sodium chloride pharmedel (250 ml, IV) (one time per day for one day).

Operation (20.05.2022)

Lumbotomy on the right according to fedorov. Revision of the right kidney and retroperitoneal space on the right. Decapsulation of the right kidney. Opening of carbuncles of the right kidney. Sanation. Drainage of the retroperitoneal space on the right. Placement of the internal stent catheter on the right. Ureteroscopy on the left with placement of an internal stent catheter on the left.

Pronounced infiltrative process in the area of the ureteropelvic segment and the hilum of the kidney. The pelvis and kidney are fully mobilized, mixed type of pelvis, the ureter is thin, the surface of the kidney is bumpy, dark purple in color, carbuncles up to three cm in size are determined under the capsule in the kidney. Produced decapsulation of the right kidney. All carbuncles were opened and sanitized.

Diagnosis Before Surgery

Right kidney carbuncle. Apostematous pyelonephritis on the left. Anemia of mixed origin, moderate stage. Pregnancy 33 weeks +four days.

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Table 1. Complete blood count and C-reactive protein (CRP)

Date	20.05. 2022*	22.05. 2022	24.05. 2022	26.05. 2022	28.05. 2022	30.05. 2022	02.06. 2022	04.06. 2022	06.06. 2022	08.06. 2022	10.06. 2022**
Leukocytes 10 ⁹ /l	26.73	14.66	7.49	7.78	9.29	12.73	12.53	11.09	9.87	8.54	9.35
Erythrocytes 10 ¹² /l	3.45	3.15	3.13	3.75	3.34	3.27	3.40	3.32	3.22	3.36	3.50
Hemoglobin g/l	95.00	86.00	87.00	102.00	90.00	90.00	95.00	91.00	86.00	91.00	94.00
Hematocrit %	27.40	25.60	25.40	29.80	26.90	26.30	28.00	27.40	26.30	27.30	28.30
Platelets 10 ⁹ /l	190	147	127	153	209	256	341	333	308	298	266
Neutrophils %	93.00	93.90	82.20	61.10	66.40	75.60	74.20	70.90	67.80	68.60	64.60
CRP mg/l	415.60	436.60	60.08	75.67	37.58	17.20	7.50	8.50	6.70	6.90	6.70

Note. *Admission date & **Discharge date

Table 2. General urine analysis

Date	20.05. 2022*	22.05. 2022	24.05. 2022	26.05. 2022	28.05. 2022	02.06.2022	04.06.2022	08.06.2022	10.06. 2022**
Color	Brown	Amber	Amber	Yellow	Yellow	Pale yellow	Pale yellow	Pale yellow	Yellow
Transparency	Very turbid	Slightly turbid	Slightly turbid	Slightly turbid	Slightly turbid	Transparent	Transparent	Transparent	Transparent
Specific gravity	1.023	1.018	1.024	1.021	1.010	1.013	1.013	1.014	1.020
Bilirubin μmol/l	50	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Urobilinogen μmol/l	70	Negative	35	Negative	Negative	Negative	Negative	Negative	Negative
Ketones mmol/l	0.5	0.5	0.5	Negative	Negative	Negative	Negative	Negative	Negative
Ascorbic acid g/l	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Glucose mmol/l	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Protein g/l	0.30	0.30	0.30	0.15	1.00	Negative	Negative	Negative	Negative
Erythrocytes ery/μl	50.00	300.00	300.00	300.00	300.00	50.00	5-10	50.00	5-10
pH	5.0	5.0	5.5	5.0	6.0	5.5	5.5	5.5	5.5
Nitrites	Positive	Negative	Positive	Negative	Negative	Negative	Negative	Negative	Negative
Leukocytes cells/μl	500	75	500	75	500	75	25	25	50

Note. *Admission date & **Discharge date

Diagnosis After Surgery

Right kidney carbuncle. Apostematous pyelonephritis on the left. Anemia of mixed origin, moderate stage. Pregnancy 33 weeks +four days. Internal stent catheter in both kidneys.

In the postoperative period, antibacterial and infusion therapy was carried out. The postoperative period proceeded without complications. With a timely operation, the postoperative period proceeds smoothly, the body temperature decreases and gradually returns to normal, the function of the affected kidney is quickly restored, as we can see in **Table 1** the decrease in the level of leukocytes and CRP in the blood, as well as in **Table 2** the decrease in the level of leukocytes and erythrocytes in the urine, on the 10th day the indicators approached the normal level. Prevention is reduced to the elimination of foci of infection. The patient was discharged on 20th day after operation with suggestions. At full term there was an independent birth.

CONCLUSIONS

Massive antibiotic therapy, even with the most powerful modern medications, does not lead to a cure for the disease with a carbuncle of the kidney without opening and draining the purulent-necrotic focus. Establishing the diagnosis of carbuncle of the kidney provides for urgent surgical intervention, which is an effective method even during pregnancy, and carries minimal risks in fetal development and delivery.

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Ethics statement: The authors stated that all medical documentation was included to the information system of Kazakhstan, which is called - damumed.kz, and only the attending physician has access to information about the patient. The authors further stated that informed consent of the patients was obtained in writing upon admission to the hospital and is attached to the patient's medical history.

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Data sharing statement: Data supporting the findings and conclusions are available upon request from the corresponding author.

REFERENCES

1. Samigullina AE, Otagonova ZK. Features of the development and course of pyelonephritis in pregnant women (literature review). *Sci New Technol Innov Kyrg.* 2015;5.
2. Vasilyeva ZV, Korobchuk VV, Tyagunova AV, et al. The state of autoimmunity in mothers during pregnancy and their newborns with different forms of pyelonephritis. *Russ Bull Obstet-Gynecol.* 2014;2:72.
3. Kravchenko EN, Gordeeva IA, Kubarev DV. Infectious and inflammatory diseases of the kidneys in pregnant women. *Diagnosis and treatment. Obstet Gynecol.* 2013;4:31.
4. Rodionov DS. Methods and tools for differential diagnosis of pyelonephritis forms and assessment of their severity based on hybrid fuzzy models [PhD dissertation]. Kursk; 2022.
5. Khodjamurodov AM. Optimization of methods of treatment of complicated forms of pyelonephritis in pregnant women [PhD dissertation]. Dushanbe; 2018.
6. Sakeev EP. Surgical tactics and intensive care in purulent-destructive forms of acute pyelonephritis in pregnant women. *Togliatti Med Council.* 2016;45-52.
7. Balushkina AA. A modern view on the treatment of urinary tract infections in pregnant women. 2018.
8. Leeper C, Lutzkanin A. Infections during pregnancy. *Prim Care.* 2018;45(3):567-86. doi:10.1016/j.pop.2018.05.013
9. Dautt-Leyva JG, Canizalez-Román A, Acosta Alfaro LF, et al. Maternal and perinatal complications in pregnant women with urinary tract infection caused by escherichia coli. *J Obstet Gynaecol Res.* 2018;44(8):1384-90. doi:10.1111/jog.13687
10. Ghouri F, Hollywood A, Ryan K. A systematic review of non-antibiotic measures for the prevention of urinary tract infections in pregnancy. *BMC Pregnancy Childbirth.* 2018;18(1):99. doi:10.1186/s12884-018-1732-2
11. Keren R, Shaikh N, Pohl HG, et al. Risk factors for recurrent urinary tract infection and renal scarring. *Pediatrics.* 2015;136(1):e13-21. doi:10.1542/peds.2015-0409
12. Okafor CN, Onyiaso EE. *Perinephric abscess.* Treasure Island, FL: StarPearls Publishing; 2020.