CASE REPORTS

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Sažetak

Uvod: Na nivou urogenitalnog trakta aktinomikozna se uglavnom manifestuje stvaranjem renalnih i perirenalnih apscesa. Metoda lečenja apscesa bubrega i bubrežne lože, koji su uzrokovani bakte- trijama iz genua Actinomyces, jeste hiruška evakuacija gnojne kolekcije uz parenteralnu terapiju penisilinom ili cefalosporinskim antibioticima u trajanju od šest nedelja. Definitivna dijagnoza se postavlja na osnovu nalaza biograma i izolacije Act. israelii iz ap- scese kolekcije kao i na osnovu karakterističnog patohistološkog nalaza. Tačna incidencija i prevalencija urogenitalne aktinomikoze nije poznata. Prikaz slučaja. Pacijentkinja starosti 54 godine javila se u Trijažnu ambulantu Urgentnog centra Kliničkog centra Vojvodine zbog bolova u predelu leve lumbalne i glutealne regije, slabosti, malaksalosti i febrilnosti. Poslednjih pet meseci lečena je kortikosteroidima kod imunologa, pod dijagnozom vaskulitisa. Na osnovu kliničkog slike, laboratorijskih nalaza krvi i urina, ultrazvučnog pregleda abdomen i kontrasne kompjuterizovane tomografije abdomen i male karlice postavljena je dijagnoza apscesa levog bubrega koji iradira u retroperitoneum, u m. iliospoas, m. gluteus maximus i ingvinalnu regiju ipsilateralno. Izvršena je hitna, operativna eksplozacija retroperitoneuma i bubrega. Lumbotomijom je pristupljeno levoj polovini retroperitoneuma uz evakuaciju apscesa i ekтомiju donjeg pola levog bubrega. Naknadno je dobijen nalaz biograma sa antištimulativnom operativno uzorkovanom aspiratu i patohistološke verifikacije da se radi o aktinomikozu bubrega. U patohistološkom nalazu tkiva koje je operativno odstranjeno bilo je prisutno vezivno masno tkivo sa izraženim zapaljenskim infiltratom koji je sastavljen od limfocita, plazmocita, histiocita i granulocita sa brojnim mikroapscesima i kolonijama aktinomikobe.

Kršćane reči: aktinomikozna bolesti bubrega; abces; retroperitonealni prostor; infekcije urinarnog trakta; dijagnoza; znaci i simptomi; urološke hiruške procedure

Summary

Introduction. Actinomycosis of the urogenital tract mainly manifests with formation of renal and perirenal abscesses. When it comes to treating renal lodge abscesses caused by Actinomyces bacteria, the method of choice is mainly surgical evacuation of purulent collections, followed by administration of parenteral penicillin or cephalosporin antibiotics during a six week period. The exact incidence and prevalence of urogenital actinomycosis is still unknown. Case Report. A 54-year-old female patient was admitted to the Emergency Department of the Clinical Center of Vojvodina for triage. She complained of pain in the left lumbar and gluteal region, weakness, malaise, and fever. She was treated with corticosteroids under the diagnosis of vasculitis five months prior to admission. Based on clinical, laboratory blood and urine tests, ultrasound examination of the abdomen and contrast CT of the abdomen and pelvis, the diagnosis of left kidney abscess was made. It also spread to the retroperitoneum (iliospoas muscle, gluteus maximus and ipsilateral inguinal region). Urgent operative exploration of retroperitoneum and kidney was performed. A lumbotomy was performed in the left half of the retroperitoneum with evacuation of abscesses, as well as partial nephrectomy of the lower half of the left kidney. Subsequently, the obtained antibiogram of operatively sampled aspirate, renal actinomycosis was histopathologically verified. The surgically removed tissue that was sent for histopathology showed presence of connective tissue infiltrated with a pronounced inflammatory infiltrate composed of lymphocytes, plasma cells, histiocytes and granulocytes with numerous microabscesses and actinomycosis colonies.

Key words: Actinomycosis; Kidney Diseases; Abscess; Retroperitoneal Space; Urinary Tract Infections; Diagnosis; Signs and Symptoms; Urologic Surgical Procedures

Introduction

Certain infectious diseases, although relatively rare in clinical practice, may lead to serious consequences, including death. One of such diseases is renal actinomycosis. Renal abscesses usually occur due to secondary hematogenous dissemination from a focus elsewhere in the body (purulent changes of...
the skin, lungs, bones, and other organs), although they can develop through direct extension from the surrounding structures. The most common pathogens that cause renal abscess are Staphylococcus aureus and Escherichia coli. The most common predisposing pathological conditions for the development of renal medullary abscesses are diabetes mellitus and urinary tract calculi. Given all the benefits of the development of modern medicine, one must not forget the importance of various kinds of immunosuppression [1 - 3]. The treatment consists of surgical evacuation of purulent collection, followed by use of antibiotic therapy (especially in case of large, limited renal abscess). Purulent content must be collected and sent for microbiological testing [1 - 3]. Actinomyces israelii is the best known representative of the genus Actinomyces, which includes anaerobic and microaerophilic Gram-positive filamentous bacteria, that coexist as saprophyes in the gastrointestinal tract and vagina. In general, bacteria of the genus Actinomyces are transitional microorganisms between bacteria and fungi. Other members of the genus are: Actinomyces odontolyticus, Actinomyces naeslundii (viscous) and Actinomyces Erikson. In an affected organism, bacteria form colonies. Colonies manifest as a yellow solid grain, a few millimeters in diameter (normally up to 2 mm), when observed by a light microscope. Microscopic materials are made up of filaments which are referred to as hyphae (hyphae are in general more characteristic for fungi than bacterial microorganisms). Actinomyces species are rather resistant; in dry environment, at the room temperature and when not exposed to direct sunlight, they can survive up to two months. They are sensitive to most antibiot-

**Case Report**

A 54-year-old female patient was admitted to the Emergency Department (ED) of the Clinical Center of Vojvodina for triage. She complained of pain in the left lumbar and gluteal region, weakness, fatigue and fever (body temperature to 39 °C). Symptoms debuted two weeks prior to admission to the ED, and

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**Figure 1.** Abdominal CT scan of the patient (contrast intravenous phase) – showing an abscess that involves the lower pole of left kidney and the surrounding musculature

**Slika 1.** Kompjuterizovana tomografija abdomena pacijenta (kontrasna faza) – pokazuje apscesnu kolekciju koja zahvata donji pol levog bubrega i okolnu muskulaturu

**Figure 2.** Pelvic CT scan of the patient - contrast intravenous phase

**Slika 2.** Kompjuterizovana tomografija male karlice pacijentkinje – kontrasna faza
have gradually got worse. Five months prior to admission, the patient had been treated at the Department of Dermatology and the Department of Nephrology and Immunology of the Clinical Center of Vojvodina, where she was diagnosed with vasculitis and received Prednisone (10 mg a day). These admissions were due to nodular inflammatory changes with purulent-hemorrhagic secretion on the skin of the lower extremities. Such pustules first appeared in January 2013. The analysis made at that time showed slightly positive antineutrophil cytoplasmic antibodies (ANCA), while proteinase-3 (PR-3) and myeloperoxidase (MPO) antibodies were proven to be negative. Immunofixation serum was M component. The Medical Advisory Board of the Department of Nephrology indicated corticosteroid treatment, which consequently induced disappearance of pustules. The pustular biopsy indicated a structure resembling rheumatoid nodule. The patient had active dental foci that were repaired during the hospital stay. Thoracic computed tomography (CT) showed signs of infiltration in the right upper lung lobe. A consulting pulmonologist indicated bronchoscopy after discharge, which was not performed. The patient suffers from bipolar affective disorder and receives Velahibin tbl. (75 mg daily), as recommended by a psychiatrist. The patient denied other chronic diseases as well as surgical interventions.

Physical examination at the ED revealed a painful fluctuating tumefaction in the left lumbar lodge, tender on palpation. Laboratory tests of blood and urine were done. Urine sediment contained a large number of leukocytes, epithelial cells and bacteria, as well as two renal epithelial cells; qualitative test was positive for nitrites and proteins. Blood test results showed leukocytosis - Leu 20.87 x 10^9/l (Neu 17.54x10^9/l). C-reactive protein was 216.4 mg/l. Urea, creatinine, acidum uricum, as well as electrolytes, were within reference values. The abdominal ultrasound showed a heterogeneous lesion, with central zones of echogenicity and peripheral vascularization, localized in the central part of left kidney, 73 x 49 mm in size. The left kidney lesion primarily corresponded with an abscess, although other etiology could not be excluded. The right kidney was of normal size, with normal parenchyma, and no signs of calculus and hydronephrosis. There was no sign of free fluid in the abdominal cavity. In the superficial structures of the right superiliac region, a hypoechoic mass (partly unclear and partly clearly limited), with anechoic central areas (that may correspond to areas of colliquation), was visualized. Based on these findings, the attending urologist made a decision to urgently perform a contrast CT of the abdomen and pelvis (Figures 1 and 2). The CT showed that the left kidney was increased, its larger diameter of 13 cm. An inhomogeneous, hypodense lesion, with clear postcontrast increase of density was seen in the interpolar region and lower pole of the kidney. Its diameters were 8 x 5 cm, most consistent with an inflammatory etiology. This lesion was structurally similar to ones visualized in the regions of the left m. iliopsoas and m. glutaeus maximus, as well as in the groin part, on the same side; all lesions were connected via channels. The right kidney and ureter were both without any pathology, and the excretory function of both kidneys was preserved. The liver was enlarged, its sagittal diameter of 17 cm in the medial clavicular line, of correct contours and a diffusely reduced density. Its structure was disrupted with fatty infiltrations, as well as a 2 cm dual zone hypodensity, corresponding to cysts. There was also an 11 mm gallbladder calculus, as well as a great number of small stones. The CT of the abdomen and pelvis was otherwise unremarkable.

Urgent surgical exploration of the retroperitoneal space and kidneys with evacuation of pus was performed immediately, using lumbar incision with a left retroperitoneal approach. Around 2.000 ml of limpid
light yellow and thick liquid was evacuated, containing small, irregularly shaped, dark yellow particles, as well as a smaller amount of brownish pus. The evacuated pus was sent for microbiology testing. Then, a partial nephrectomy was performed - the lower pole of the left kidney that was affected by purulent process had been removed, and sent for histopathological examination. The peritoneum and the retroperitoneum were drained. The surgical wound was closed in layers. The surgeon made an incision and evacuated the gluteal collection that had the same characteristics as the previously described one. The patient was postoperatively admitted to the Department of Urology, Clinical Center of Vojvodina, where she stayed for three weeks. The initial parenteral antibiotic therapy included ceftriaxone 2 g/12h for 10 days and metronidazole 500 mg/8h for 7 days. After receiving the antibiogram results, as well as histopathological verification of renal actinomycosis, the therapy was changed to parenteral amoxicillin/clavulanic acid at dose of 1200 mg/12 h for 10 days. The antibiotic treatment continued after discharge for additional 20 days, but the patient received trimethoprim/sulfamethoxazole tablets, 960 mg/12 h.

Histopathological analysis of surgically removed tissue showed connective tissue and fat with an inflammatory infiltrate composed of lymphocytes, plasma cells, histiocytes and granulocytes, with numerous colonies and microabscesses containing actinomycosis (Figures 3 and 4). During several months of follow-up, the patient had been in good physical condition, and all laboratory results were within reference values.

Control CTs of the thorax, abdomen and pelvis, performed at follow-ups, showed persisting lesions in the right lung, liver, gallbladder and spleen. Further treatment, after discharge was done by a specialist in infectious diseases.

**Discussion**

Actinomyces israelii is a microorganism that rarely causes an infection in humans [1–9]. Actinomycosis mainly affects the neck and mediastinum and less often the abdomen and lower pelvis. In almost all cases reported in the literature, actinomycosis is described as a chronic, slowly progressive infection [2, 4]. The progression of the disease and our patient’s medical history (considering clinical manifestations and duration of the disease) corresponds to the clinical picture of actinomycosis. There are few cases of urinary tract infections with actinomycosis in the literature, mainly as complications of enterovesical and vesicovaginal fistulas, almost always in females [2, 7–9]. In most cases, it occurs among patients who are either immunocompromised or have had major surgeries of the urinary tract [2, 4–9]. The presented patient received a five-month-long continuous immunosuppressive therapy that led to a progress when it comes to pustules on the lower extremities, but on the other hand, it triggered further dissemination of actinomycoses infection, due to decreased immune response. Previously described changes of the lung parenchyma corresponded to bacteria from the genus Actinomyces, but histopathological verification was necessary for definitive diagnosis. There are not many reported clinical cases of renal and perirenal abscesses. All of the described cases of pelvic actinomycosis included ascites, pleural effusions and pelvic lymphadenopathy. In almost all cases, the diagnosis was based on microbiological and histopathological changes in surgically removed tissue [2, 4–9]. An abscess is an infectious process that can easily induce sepsis, and if not adequately and aggressively treated, it may easily lead to permanent renal failure, or even death [1–3]. Renal abscesses are a particular problem from the standpoint of urgent urology, especially when one needs to decide whether to perform an urgent surgical exploration and evacuation, or conduct a conservative treatment with antibiotics prior to intervention [2–4, 7–9, 11–21]. In most described literature cases, actinomycosis infection (disregarding anatomic localization of process itself), is characterized by fever, weakness and fatigue. Laboratory blood test results revealed a leukocytosis (caused by an increase in neutrophil granulocyte absolute value), as well as an increased value of C-reactive protein [2–4, 7–9, 11–21]. In almost all cases, the inflammatory collection was revealed by CT of the corresponding part of the body, and the final diagnosis was based on histological findings. Most patients are over 55 years old. When it comes to our case report, the diagnosis was established based on worldwide accepted clinical procedures. According to the age, the presented patient fits the age population in which actinomycosis is usually diagnosed.

The main problem, after studying actinomycosis nearly 80 years, is that initial factor that leads to the infection is still not fully known. Commonly recognized initial factors are immunosuppression and violation of integrity of mucous membranes of the gastrointestinal, respiratory and urogenital tract (caused either by trauma, or surgical intervention). However, until now, none of them has been fully confirmed, nor are they entirely discarded. Our patient was receiving immunosuppressive therapy and had a dental focus that certainly might have been the initial point of entry of actinomyces into the systemic circulation. Another question is, how many patients are there in our everyday clinical practice, presenting with common infectious syndromes, among whom an underlying actinomycosis diagnose is unrecognized. Absence of a specific laboratory test for detection of specific antibodies against actinomycosis antigens disables setting the diagnosis without histopathological evaluation. This delays the beginning of adequate therapy and raises the cost of treatment.

**Conclusion**

Although renal and retroperitoneal abscesses caused by bacteria from the Actinomyces genus are
relatively rare compared to other etiologies, it is logical to assume a probable increase in this form of urinary tract changes, especially having in mind a constantly growing number of persons with immunodeficiency, as well as the rapid aging of the global population. Also, there is an increasing number of patients with comorbidities who are subjected to invasive surgical procedures, such as, for example, radical cystectomy in urology. Considering all the above mentioned, actinomycosis has an important place when it comes to differential diagnosis of solid masses as well as purulent collections of the urogenital tract.

References