

A Case of Bilateral *Nocardia francinina* Adrenal Abscesses in an Intravenous Drug-Using Splenectomized Patient With Tricuspid Endocarditis

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Adrenal abscesses due to disseminated nocardiosis are exceedingly rare in clinical practice, and to date only 8 cases have been reported in the literature, most of which were confined to a single adrenal gland. These infections often occur in patients with underlying immune deficiency. We report a rare case of bilateral nocardial adrenal abscesses in an intravenous drug-using splenectomized patient that presumably originated from direct inoculation using intravenous opiana, as his admission chest radiograph was normal.

Keywords. adrenal gland; disseminated nocardiosis; splenectomy; abscess.

CASE PRESENTATION

A 39-year-old male smoker with history of remote surgical splenectomy following traumatic splenic laceration and active intravenous drug use (IVDU) with oxycodone presented with complaints of fever, generalized weakness, abdominal pain, and orthostatic symptoms of 7 days' duration. Physical exam was remarkable for cachexia, with a body mass index (BMI) of 18 kg/m², dehydration, and abdominal tenderness. Admission labs were significant for creatinine of 2.23 mg/dL, profound leukocytosis (white blood cell count of 43 000 cells/mcL with 84.5% neutrophils), thrombocytosis (602 000 platelets/mcL), and elevated procalcitonin at 1.81 ng/mL.

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Figure 1. A computerized axial tomography scan of the abdomen showing an 8.1 × 5.1-cm left adrenal mass and an 8.3 × 4.9-cm right adrenal mass.

Computed tomography (CT) of the abdomen and pelvis noted the presence of bilateral multiloculated rim-enhancing regions within both adrenal glands (Figures 1 and 2). HIV testing was negative, and hepatitis C antibody was positive. The patient was initially started on meropenem 500 mg intravenous (IV) every 6 hours and IV vancomycin; admission chest radiograph (CXR) was read as unremarkable, and

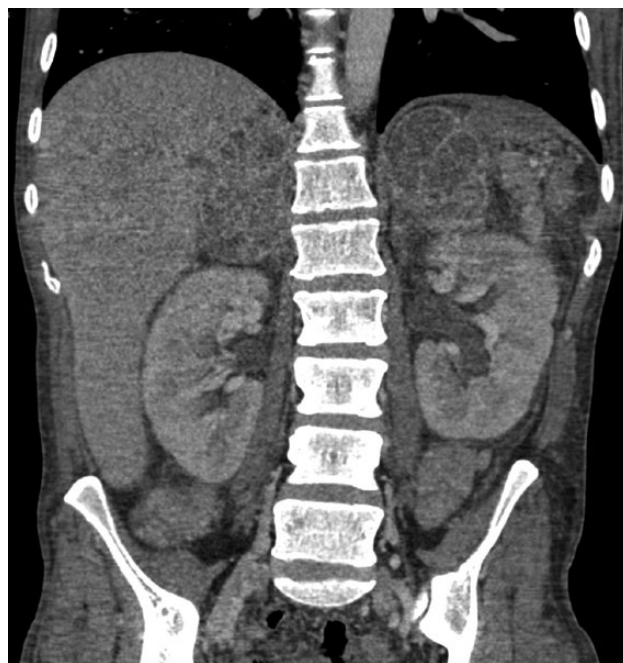


Figure 2. A computerized tomography scan in coronal view showing abscesses in the bilateral adrenal glands.

Table 1. Prior Cases of Disseminated Nocardiosis in Adult Splenectomized Patients

No.	Reference	Age, y/Sex	Predisposing factor	Reason for splenectomy	Nocardia Organ Involvement	<i>Nocardia</i> spp.	Final Antibiotics Used	Outcome
1	Abdi et al.	43/male	Lymphocytic lymphoma	Splenomegaly and pancytopenia	Pulmonary	<i>Asteroides</i>	Co-trimoxazole	Died
2	Abdi et al.	29/female	Hodkins lymphoma	Splenomegaly	Pulmonary	<i>Asteroides</i>	Co-trimoxazole	Survived
3	Abdi et al.	44/male	Nodular lymphoma	Splenomegaly and pancytopenia	Pulmonary	<i>Asteroides</i>	Co-trimoxazole	Survived
4	Casas Vara et al.	32/male	Alcohol abuse	Road traffic accident	Pulmonary	<i>Not speciated</i>	Co-trimoxazole	Survived
5	Moitra et al.	29/female	SLE	Thrombocytopenia	CNS	<i>Asteroides</i>	Linezolid	Survived
6	This case	39/male	Malnutrition, IVDU	Traumatic splenic laceration	Bacteremia, adrenal gland	<i>Francinia</i>	Merepenem and TMP-SMX	Survived

Abbreviations: CNS, central nervous system; IVDU, intravenous drug user; SLE, systemic lupus erythematosus; TMP-SMX, trimethoprim-sulfamethoxazole.

transthoracic echo showed a small vegetation on the tricuspid valve. Interventional radiology placed bilateral percutaneous drains in the adrenal glands.

Admission blood cultures grew branching gram-positive rods, which were confirmed to be *Nocardia francinia* in 2 out of 2 samples obtained after 24 days of incubation. The organism was ultimately speciated at the state lab. Susceptibility testing was not done as it was not initially included in the request by microbiology. The patient was clinically improving, so it was not pursued. Multiple cultures from the percutaneous drains also grew *Nocardia francinia*. Antibiotics were modified to IV trimethoprim-sulfamethoxazole (TMP-SMX) in appropriate doses, and IV meropenem was continued.

The patient ultimately completed 4 weeks of combination meropenem and TMP-SMX, with clinical and radiographic improvement and weight gain of 25 kg, and the patient was transitioned to oral maintenance therapy with TMP-SMX with plans to continue for 12 months and discharged home. Unfortunately, the patient was lost to follow-up.

DISCUSSION

Nocardia bacteria are soil-dwelling, gram-positive rods that are weakly acid-fast and are found ubiquitously in the environment [1, 2]. Disseminated disease occurs more commonly in patients with predisposing immunocompromising disease; however, cases have occurred in patients even in the absence of any predisposing risk factor. It has a high mortality, especially when the central nervous system is involved [1–4]. As the prevalence of immunocompromised patients has increased in recent decades due to advances in treatments for autoimmune disease and malignancy, so too has the incidence of invasive nocardiosis [1]. Our patient's risk factors for nocardiosis included his prior splenectomy, malnutrition, and active IVDU status. Splenectomy as a risk factor had occasionally been described in prior case reports; however, most of these patients had other underlying immunocompromising conditions or therapies [5–7]. Characteristics of the previously reported cases of nocardiosis in splenectomized patients are outlined in Table 1.

The majority of nocardiosis infections in the United States manifest as pulmonary nocardiosis, whereas bacteremia, sternal wound infections, and cutaneous nocardiosis are less common presentations [1]. Adrenal abscesses due to nocardia have only been described in 8 case reports [4] and have only been previously reported twice as occurring in the bilateral adrenal glands [8, 9]. In contrast to the more common mode of entry of inhalation of bacteria causing pulmonary infection and dissemination, our patient presented with bacteremia, right-sided endocarditis, and negative CXR, suggesting that the mode of entry was direct hematologic spread through inoculation of the bacteria by nature of intravenous drug use. Treatment of nocardia adrenal abscess should include drainage and appropriate antibiotics, depending on sensitivity, including TMX-SMX, carbapenems, amikacin, minocycline, third-generation cephalosprins, and linezolid [3, 4, 10]. Meropenem was used specifically in this case because it is the formulary carbapenem at our institution.

CONCLUSION

Our case highlights the importance of considering the possibility of nocardia infection in IVDU, especially in the presence of other predisposing conditions. *Nocardia* should be included in the differential diagnosis of adrenal abscess in the aforementioned patient population as direct inoculation of the bacteria through the IVDU is likely. Early diagnosis and treatment improve prognosis.

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