

Case Report

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Venous Access Port-related *Nocardia* Bacteremia with Successful Short-term Antibiotics Treatment

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Key Words

bacteremia;
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Nocardia infection occurs primarily among patients with deficient cell-mediated immunity. The portal of entry in the majority of patients with *Nocardia* infection is pulmonary origin. Central venous catheter-associated bacteremia caused by *Nocardia* species is very rare, and the optimal management for these situations was indeterminate. Most patients were cured after discontinuation of central venous catheter and prolonged antibiotics use. Thereafter, we reported an 18-year-old male who received chemotherapy for his nasal rhabdomyosarcoma had central venous catheter-associated *N. asteroides* bacteremia. The outcome was satisfying after discontinuation of central venous catheter followed by short-term antibiotics. Conclusively, prolonged antibiotics may not be necessary in catheter-associated *Nocardia* bacteremia without distant metastatic site after removal of catheter.

Systemic *Nocardia* infections occurs primarily among immunocompromised patients and the portal of entry in majority of these patients is pulmonary origin. Though nocardiosis can involve nearly every organ via hematogenous dissemination, isolation of the organism from blood cultures is rare.¹ Central venous catheter (CVC)-related bacteremia caused by *Nocardia* species is even rarer. We describe an 18-year-old man with nasal rhabdomyosarcoma who developed venous access port-related *N. asteroides* bacteremia. The patient was cured of nocardiosis after surgical removal of the catheter and short-term antibiotics treatment.

CASE REPORT

An 18-year-old boy was diagnosed to have nasal rhabdomyosarcoma in November, 1997. For administration of chemotherapy, he received Port-A-Cath (PAC) (BardPort; C.R.Bard, Salt Lake City, Utah) implantation via right subclavian vein in December, 1997. In the following 2 months, alternative chemotherapeutic agents including vincristine, epirubicin, cyclophosphamide,

ifosfamide and etoposide were given for 3 cycles. Then patient was lost to follow-up. Because of local relapse of rhabdomyosarcoma, he was admitted on May 13th, 1998 for further chemotherapy. Fever up to 39 °C developed after hydration via PAC. No obvious infectious focus could be identified. The complete blood count revealed a hemoglobin of 14.2 g/dL and a white blood cell count of 7700/mm³ with a differential of 73% neutrophils and 18% normal lymphocytes. Empiric antibiotics, intravenous cephalothin, 2 g every 6 hours and gentamicin, 3 mg/kg/day, were administered. The PAC was discontinued the next day. The patient became afebrile after 24 hours of antibiotics treatment. Blood culture obtained from PAC grew gram-positive rods that were subsequently identified as *N. asteroides*. The pathogen was susceptible to tetracycline, gentamicin and co-trimazole. The blood culture obtained from a peripheral site was sterile. PAC-associated *N. asteroides* bacteremia was diagnosed. PAC was removed on the 9th day after fever development. Antibiotics were kept in use, with cephalothin and oral tetracycline, 2000 mg/day. Culture of the catheter tip grew *N. asteroides*. All antibiotics were discontinued after a 12-day course of treatment. After that

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Table 1. Characteristics and outcome of reported CVC-related *Nocardia* bacteremia

Age/sex	Underlying disease	Catheter type	<i>Nocardia</i> species	Antibiotics use	Removal of catheter	Outcome	Ref
4/M	ALL	Port-A-Cath	<i>N.nova</i>	Ceftriaxone (28d)	No	Relapse	4
12/M	Thalassemia	Hickman	<i>N.caviae</i>	Imipenem (14d)	No	Cure	5
18/F	Thalassemia	Hickman	<i>N.asteroids</i>	Meropenam (21d)	No	Cure	6
29/F	Hodgkin's disease	N/D	<i>N.asteroids</i>	TMP/SMZ (28d) and PO minocycline (70d)	Yes	Cure	2
46/F	Breast cancer	N/D	<i>N.asteroids</i>	Imipenem and amikacin (90d)	Yes	Cure	2
18/M	Rhabdomyosarcoma	Port-A-Cath	<i>N.asteroids</i>	Cephalothin (12d) and gentamicin (8d) plus tetracycline (4d)	Yes	Cure	PR

M = male; F = female; ALL = acute lymphoblastic leukemia; d = days; PO = orally; TMP-SMZ = trimethoprim-sulfamethoxazole; N/D = no data; PR = present report.

episode, the patient continued to receive chemotherapy and radiotherapy. However, the patient died of disease progression 8 months after *Nocardia* infection. There were no signs or symptoms of nocardiosis recurrence.

DISCUSSION

Long-term CVCs are frequently used in cancer or thalassemia patients for administration of chemotherapy agents, nutrition support, or blood transfusion and can be classified as external tunneled catheters, such as Hickman and Groshong catheters, and totally implantable subcutaneous venous access devices, such as PAC. Though increasingly unusual pathogens have been isolated from catheter-related infections, catheter-related *Nocardia* infection is very rare. Only 5 cases of CVC-related *Nocardia* bacteremia have been reported in the English literature^{2,4-6} (Table 1). Among these 5 patients, PAC-related *Nocardia* bacteremia developed in 2 pediatric patients. The usual recommendation for treatment of systematic nocardiosis is 3 to 6 months of antibiotics.³ However, because of the rarity of catheter-related *Nocardia* infections, the optimal treatment is unknown in such patients. Reviewing the 5 patients with catheter-related *Nocardia* bacteremia in the literature, only 1 patient experienced recurrent infection. In this patient, the PAC was not removed till the nocardiosis relapse. Another 2 pediatric patients were cured of nocardiosis with catheter left *in situ* after 2-3 weeks of antibiotics treatment. However, these 2 pa-

tients did not receive further chemotherapy or immunosuppressant after the infectious episodes. The duration of antibiotics use in all the historical patients ranged from 14 to 98 days. No patient died of *Nocardia* infection. In contrast to non-catheter-related *Nocardia* bacteremia, which causes 50% mortality,¹ catheter-related *Nocardia* bacteremia seemed to run a more benign course. In our patient, only 12 days of antibiotics was used after port removal, and further chemotherapy was administered smoothly in the following 6 months without further evidence of *Nocardia* infection. From the experience of our patient and literature review, we consider prolonged antibiotics may not be necessary in the treatment of catheter-related Nocardiosis if no metastatic site of *Nocardia* infection has been identified and catheter has been removed early. Whether the catheter could be successfully salvaged through medical treatment needs to be studied further.

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