alert," similar to an "ESBL alert," "VRE alert," or "MRSA alert," to deal with antibiotic resistance, antibiotic stewardship, and hygiene measures, rather than describing single strains of resistant GN.[1]

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Port-Related *Aeromonas* Bacteremia

To the Editor—*Aeromonas* species are gram-negative, rod-shaped bacteria that are prevalent in the aquatic environment, including in fresh or brackish water, sewage, soil, and tap water, in temperate or subtropical countries.[1,2] Although the gastrointestinal tract is the most common site of infection caused by *Aeromonas* species,[1,2] extraintestinal *Aeromonas*-associated diseases, such as empyema, urinary tract infections, biliary tract infections, peritonitis, and skin and soft-tissue infections, have also been reported.[3-7] Herein, we report a study undertaken to find cases with unusual presentation of *Aeromonas* infection associated with subcutaneously implanted port reservoir (eg, port-related infection) and further investigate the associated clinical and microbiological characteristics.

This study was conducted at a single institution, a 900-bed hospital located in southern Taiwan. From the computerized database of the bacteriology laboratory, patients whose cultures yielded *Aeromonas* species were identified. The medical records of all patients with port-related infection caused by *Aeromonas* species were retrospectively reviewed and included in this study.

Blood specimens were inoculated into BACTEC culture bottles using the BACTEC 9240 system (Becton Dickinson). Gram-negative isolates that tested positive for cytochrome oxidase, glucose fermentation, citrate usage, indole production, and ornithine decarboxylase were classified as *Aeromonas* species, as in earlier studies.[6,7] Susceptibilities of these isolates to a battery of antimicrobial agents were determined using the disk diffusion method as described by the Clinical and Laboratory Standards Institute.[8]

The diagnosis of port-related *Aeromonas* bacteremia was defined as primary laboratory-confirmed *Aeromonas* bacteremia in a patient with a port at the time of or within 48 hours before the onset of symptoms for whom infection was not related to an infection at another site. Standard definitions for healthcare-associated infection (HAI) were used.[9,10] Shock was diagnosed in patients with a systolic blood pressure less than 90 mmHg or in patients who required inotropic agents to maintain blood pressure. Infections were classified as polymicrobial infections if non-*Aeromonas* pathogens also grew from the blood sample. Inappropriate use of antibiotics was defined as use of antimicrobial agents to which the clinical isolates were resistant in vitro.

During the study period, a total of 5 patients were identified as having port-related *Aeromonas* bacteremia. Two infections were caused by *Aeromonas veronii* biovar sobria, 2 by *Aeromonas caviae*, and 1 by *A. veronii* biovar veronii. All of the clinical isolates were resistant to ampicillin, amoxicillin-clavulanate, and cefazolin, but they were susceptible to amikacin and gentamicin. Additionally, third- or fourth-generation cephalosporins, piperacillin-tazobactam, and ciprofloxacin showed in vitro activity against 4 (80.0%) of 5 isolates.

The clinical characteristics of 5 patients with port-related *Aeromonas* bacteremia are summarized in Table 1. Men comprised 4 of 5 patients, and the age ranged from 57 to 82 years. All of them had various cancers, and 4 had received chemotherapy. Four of the patients had initial presentations of fever, and 2 had shock. Two of the patients had white blood cell counts greater than 11,000 cells/mL, and none had neutropenia. In addition, 3 patients had hemoglobin levels less than 10 g/dL, and 3 patients had an elevated C-reactive pro-

TABLE 1. Clinical Manifestations of 5 Patients with *Aeromonas* Species Port-Related Infection

Variable	Patient (year)				
	1 (2009)	2 (2009)	3 (2010)	4 (2011)	5 (2012)
Age, years	57	57	73	75	82
Sex	M	M	M	M	M
Underlying disease	Gastric cancer undergoing chemotherapy	Pancreatic cancer undergoing chemotherapy	Tongue cancer undergoing chemotherapy	Colon cancer undergoing chemotherapy	Cholangiocarcinoma
Healthcare-associated infection	Yes	Yes	Yes	Yes	Yes
Fever	Yes	No	Yes	Yes	Yes
Shock	Yes	No	No	Yes	No
Aeromonas species	*Aeromonas veronii* biovar sobria	*A. veronii* biovar sobria	*Aeromonas caviae*	*A. veronii* biovar veronii	*A. caviae*
Polymicrobial infection	*Escherichia coli*	*E. coli*	No	*Klebsiella oxytoca*	No
Removal of catheter	No	No	Yes	No	Yes
Antibiotic(s)	Ceftazidime	Ceftazidime	Cefepime	Flomoxef	Flomoxef and piperacillin-tazobactam
Mortality	Yes	Yes	No	Yes	No

tein level. Two of the patients (case patients 3 and 5) had their ports removed, and 1 patient (case patient 5) did not initially receive appropriate antibiotics. The overall in-hospital mortality was 60%.

This study describes a rare cluster of *Aeromonas* bacteremia among hospitalized patients with cancer with ports at a single center. Although rare, *Aeromonas* species should be considered as a possible pathogen causing intravascular catheter-related bacteremia in immunocompromised patients in healthcare settings.

The clinical outcomes of patients with catheter-associated *Aeromonas* bacteremia have not been well defined because of the limited number of cases. In our study, 2 patients had favorable outcomes after removal of the port, even though 1 patient did not receive initial appropriate antibiotic therapy. In contrast, all patients who did not have removal of the port died. These findings concur with recommendations by the Infectious Diseases Society of America that all devices be removed in cases of catheter-related infection caused by gram-negative bacteria.[10]

The antibiotic susceptibility patterns of the clinical isolates in this study were similar to those reported elsewhere.[2-7] Third- or fourth-generation cephalosporins or fluoroquinolones may be appropriate antibiotic choices for patients with *Aeromonas* bacteremia based on the in vitro studies, but clinicians still need to keep in mind the complexity of in vitro and in vivo correlations when choosing antimicrobial treatment for *Aeromonas* infections. In conclusion, port-related bacteremia caused by *Aeromonas* species can develop in immunocompromised patients and can be associated with high fatality rates if the catheter is not removed.

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Tuberculosis Infection Control: Potential Benefit of a New Rapid Tuberculosis Test in a Human Immunodeficiency Virus/AIDS Reference Hospital

To the Editor—The risk of nosocomial transmission of tuberculosis (TB) to healthcare workers (HCWs) is well known[1] and is a major challenge in developing countries.[2] The risk to HCWs is related to the number of patients with known smear-positive TB admitted to the hospital[3] and whether effective infection control measures are in place.[4] Brazil has clear guidelines for TB infection control, which include the rapid assessment of patients with suspected cases of TB to establish their infectiousness, the use of airborne precautions, and prompt treatment of smear-positive or highly suspected cases.[5] In high-income countries, the prevalence of latent TB infection (LTBI) decreased from 0.1%–10.0% before 1995 to 0.1%–1.2% after infection control measures were implemented.[6] In low- and middle-income countries, a systematic review showed a prevalence of LTBI of 54% and an attributable TB risk among HCWs, compared with the general population, ranging from 25 to 5,361 cases per 100,000 population.[2] The World Health Organization (WHO) recommends the implementation of new technologies for earlier diagnosis of TB, aiming to reduce transmission, including in healthcare settings.[7] Although the Xpert MTB/RIF (GeneXpert) test is approved for the diagnosis of TB,[7] no study has, to our knowledge, evaluated its potential benefit in reducing nosocomial transmission.

We aimed to evaluate the time to sputum test results in routine conditions at an infectious disease reference hospital in Manaus, Brazil, a city with a TB incidence rate of 67.3 cases per 100,000 inhabitants in 2011.[8] Patients whose sputum samples were sent to smear microscopy (SSM) examination from January 1 to May 16, 2012, or Xpert from May 31 to October 29, 2012, during a stepped-wedge rollout study to implement Xpert in Brazil[8] were included. Patients' demographic characteristics (sex and age), hospital location when TB was first suspected, HIV status, time in hours from laboratory request to laboratory result availability, and test results were extracted from electronic records. Statistical analysis was performed using Stata 11.2 (StataCorp). Pearson χ^2 test was used to compare proportions, and a Kaplan-Meier curve with log-rank and Peto tests was performed to compare time differences. Statistical significance was established at 5%. When dates, but not hours, were available at the electronic laboratory register, the mean number of hours per period and number of days difference were then imputed. The parent rollout study was approved by the national ethical board (CONEP 630/2010) and by the institutional review board (Fundação de Medicina Tropical Heitor Vieira Dourado, dated November 24, 2011).

We collected information from 270 patients, including 142 with SSM and 128 with Xpert test results. Eighteen patients in the SSM group (12.7% [95% confidence interval (CI), 7.7%–19.3%]) and 19 patients in the Xpert group (14.8% [95% CI, 9.2%–22.2%]) had positive results. Among the latter patients, 2 (10.5%) had results positive for rifampin resistance.

More participants in the Xpert group than in the SSM group were male (67.2% vs 54.9%; $P = .039$) and had suspected TB at admission to the emergency department (56.3% vs 43.4%; $P = .094$). The median age was similar (37 vs 35 years; $P = .663$).

Although there was no difference in median time in hours (6.8 hours [interquartile range (IQR), 6.2–10.0 hours]) versus the SSM group (15.0 hours [IQR, 4.2–26.5]; $P = .117$), the Kaplan-Meier curve with time from request to test results by period showed a shorter time using Xpert. Both the log-rank and the Peto tests were significant ($P < .001$; Figure 1).

Although one would expect the laboratory turnaround time to be similar between the SSM and Xpert groups, the difference in reporting time is probably attributable to the result of operational issues in the laboratory and laboratory reporting system. This fact would indicate that our results are specific to our setting and not amenable to be applied to

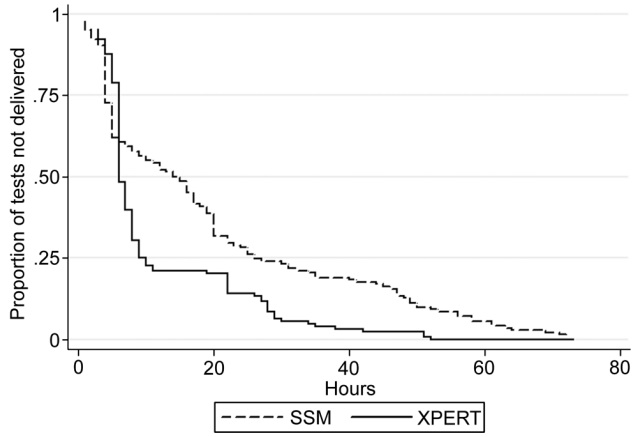

FIGURE 1. Kaplan-Meier curve with time for test results by period, Fundação de Medicina Tropical Heitor Vieira Dourado (FMT-HVD; Manaus, Brazil), 2012. Data are from the laboratory electronic data registry, FMT-HVD, 2012. SSM, sputum smear microscopy; XPERT, Xpert MTB/RIF test (GeneXpert).

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