an oxidase-positive, gram-negative bacillus. However, culture results of the other specimens were all negative. The biochemical profile of the isolate generated by the Vitek GNI Plus card (bioMérieux) and negative reactions for esculin hydrolysis and Voges-Proskauer test were in agreement with the identification of *A. trota*. The isolate was resistant to cefazolin, cefmetazole, and flomoxef but was susceptible to ampicillin, ceftazidime, cefepime, and imipenem, using the standard disk diffusion method. The patient responded unsatisfactorily to flomoxef treatment, with persistent fever and hypotension necessitating inotropic agent use. Antibiotic treatment was switched to intravenous ceftazidime (1 g every 8 h) after the notification of the susceptibility test results; fever subsided 1 day later, and the wound improved gradually. The patient experienced an uneventful recovery during 14 days of ceftazidime treatment.

Human infections with *Aeromonas* species are most often associated with trauma involving exposure to contaminated fresh or brackish water or soil [1]. The predominant *Aeromonas* species associated with human infections are *Aeromonas hydrophila, Aeromonas caviae,* and *Aeromonas sobria* [1–3]. *A. trota* is commonly isolated from human feces, and isolation of this organism from a human appendix has also been reported [4]. However, *A. trota* has rarely been documented as a causative agent of human infections [2, 4, 5].

Voss et al. [6] reported that 43% of *Aeromonas* species–associated wound infections were water-related and that the striking of a submerged object (e.g., roots, tree branches, or rocks) while walking barefoot along the bank of a stream, river, or lake was the common precipitating event. Our patient was initially hospitalized because of injuries sustained from a fall into a pond while she was riding a motorcycle. This history suggests that *A. trota* infection developed as a result of exposure of the abrasion injury to an environmental source (water or soil) containing aeromonads. Most infections caused by *Aeromonas* species are found in immunocompromised hosts, especially in patients with liver cirrhosis (as in our patient) and malignancies [7, 8].

In previous reports, isolates of *A. trota* were shown to be susceptible to many antimicrobial agents, including ampicillin and piperacillin, but some were resistant to cefazolin (to which 20% of isolates were resistant) and cephamycin (i.e., cefoxitin, to which 13% of isolates were resistant) [4, 9]. The antibiogram of our isolate supported the identification of *A. trota* [9]. The poor in vivo response to flomoxef experienced by our patient also paralleled the in vitro resistance of our isolate to this agent.

In summary, exposure to a fresh water environment and underlying liver cirrhosis were important precipitating factors for the development of an aeromonal wound infection in our patient. This case demonstrates that *A. trota* infection can present as wound infection and septic shock.

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References

1. Murray PR, Baron EJ, Jorgensen JH, Pfaller MA, Yolken RH. Manual of clinical microbiology. 8th ed. Washington DC: ASM Press, **2003**.
2. Janda JM, Abbott SL. Evolving concepts regarding the genus *Aeromonas:* an expanding panorama of species, disease presentations, and unanswered questions. Clin Infect Dis **1998**; 27: 332–44.
3. Kelly KA, Koehler JM, Ashdown LR. Spectrum of extraintestinal disease due to *Aeromonas* species in tropical Queensland, Australia. Clin Infect Dis **1993**; 16:574–9.
4. Carnahan AM, Chakraborty T, Fanning GR, et al. *Aeromonas trota* sp. nov., an ampicillin-susceptible species isolated from clinical specimens. J Clin Microbiol **1991**; 29:1206–10.
5. Reina J, Lopez A. Gastroenteritis caused by *Aeromonas trota* in a child. J Clin Pathol **1996**; 49:173–5.
6. Voss LM, Rhodes KH, Johnson KA. Musculoskeletal and soft tissue *Aeromonas* infection: an environmental disease. Mayo Clin Proc **1992**; 67:422–7.
7. Ko WC, Chuang YC. *Aeromonas* bacteremia: review of 59 episodes. Clin Infect Dis **1995**; 20: 1298–304.
8. Gold WL, Salit IE. *Aeromonas hydrophila* infections of skin and soft tissue: report of 11 cases and review. Clin Infect Dis **1993**; 16: 69–74.
9. Overman TL, Janda JM. Antimicrobial susceptibility patterns of *Aeromonas jandaei, A. schubertii, A. trota,* and *A. veronii* biotype veronii. J Clin Microbiol **1999**; 37:706–8.

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Invasive Aspergillosis in Patients with Acute Leukemia: Update on Morbidity and Mortality—SEIFEM-C Report

To the Editor—*Aspergillus* species represent the main cause of fungal infections in patients with acute leukemia [1, 2]. During the past few years, we have conducted 2 consecutive multicenter studies to evaluate the incidence of and mortality rate associated with aspergillosis among these patients [2, 3]. In the first study (conducted from 1987 through 1998), among 4448 cases of acute leukemia (both lymphoid and myeloid), we identified 209 cases of proven or probable invasive aspergillosis, with an incidence of 4.7% and an attributable mortality rate (AMR) of 48% [2]. More recently (from 1999 through 2003), among a population of 4185 patients with acute leukemia, 257 proven or probable cases of aspergillosis were diagnosed, with an incidence of 6.1% [3]; the AMR was 38.5% (99 of 257 cases ended in death). Six institutions participated in both studies; an analysis of all patients with acute leukemia from 1987 through 2003 has been possible. An absolute increase in cases of aspergillosis was

observed, but the incidence rate remained stable. Conversely, a significant reduction in AMR was documented (from 60% [12 of 20 cases ending in death] during 1987–1988 to 32% [24 of 76 cases ending in death] during 2002–2003; $P = .019$).

Since 2003, we have had the perception that the application of a correct and timely diagnostic examination (including, for example, a galactomannan test, PCR, and a high-resolution chest CT scan) and the availability of more efficacious and less toxic antifungal drugs (i.e., voriconazole and caspofungin) have modified the epidemiology of aspergillosis. To confirm this perception, a new study was performed in 2006. Two hundred thirty-seven new cases of acute leukemia were recorded among the 6 centers that participated in the other 2 studies. Invasive aspergillosis was diagnosed in 30 of these cases (6 [20%] were proven cases, and 24 [80%] were probable cases), with an incidence of 12.7%; invasive aspergillosis was the cause of death in only 4 patients (AMR, 13%). A comparison was made between the incidence of and AMR associated with acute leukemia in 2002 (the year before the introduction of caspofungin and voriconazole) and 2006. A significant increase in the incidence (25 of 430 cases vs. 30 of 237 cases; $P = .002$) and a decrease—although not significant—in the AMR (24% [6 of 25 cases ending in death] vs. 13% [4 of 30 cases ending in death]) were observed.

These data confirm recent results showing that a prompt diagnostic examination is very helpful for identification of aspergillosis [4]. The apparent increase in the incidence may have occurred because diagnoses that were only suspected in the past are now more easily affirmed. In particular, the increased incidence of probable aspergillosis that we observed could be related to the increased reliability of galactomannan tests, allowing for a decrease in the proportion of possible aspergillosis, according to the upgraded European Organization for Research and Treatment of Cancer/Mycosis Study Group criteria (5).

The absence of common upgraded guidelines for the use of new antifungal drugs had allowed all participating centers to use different therapeutic approaches, according to literature [6–8], local experience [9], and international trials [10]. On the other hand, clinical data on the use of voriconazole, caspofungin, or liposomal amphotericin B revealed no difference with regard to mortality. The lack of statistical difference in AMR was probably because of the low number of cases, although present data confirm a trend of decreased AMR, which was observed in a previous study [3].

In conclusion, our data suggest that, presently, mortality attributable to invasive aspergillosis associated with acute leukemia is probably a less compelling problem than is morbidity. New antifungal drugs are associated with decreased mortality rates, although they are also associated with higher costs. An effective prophylaxis could play a role in decreasing the number of cases of aspergillosis. Recent data have revealed that posaconazole prophylaxis might decrease the incidence of aspergillosis [11], whereas, in the past, fluconazole or itraconazole failed to do this.

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References

1. Patterson TF, Kirkpatrick WR, White M, et al. Invasive aspergillosis: disease spectrum, treatment practices, and outcomes. I3 Aspergillus Study Group. Medicine **2000**; 79:250–60.
2. Pagano L, Girmenia C, Mele L, et al. Infections caused by filamentous fungi in patients with hematological malignancies: a report of 391 cases by GIMEMA infection. Haematologica **2001**; 86:862–70.
3. Pagano L, Caira M, Candoni A, et al. The epidemiology of fungal infections in patients with hematologic malignancies: the SEIFEM-2004 study. Haematologica **2006**; 91:1068–75.
4. Maertens J, Theunissen K, Verhoef G, et al. Galactomannan and computed tomography–based preemptive antifungal therapy in neutropenic patients at high risk for invasive fungal infection: a prospective feasibility study. Clin Infect Dis **2005**; 41:1242–50.
5. Donnelly JP. Consensus definitions for invasive fungal disease: strengths, limitations, and revisions. Med Mycol **2006**; 44(Suppl):285–8.
6. Herbrecht R, Denning DW, Patterson TF, et al. Voriconazole versus amphotericin B for primary therapy of invasive aspergillosis. N Engl J Med **2002**; 347:408–15.
7. Maertens J, Raad I, Petrikkos G, et al. Efficacy and safety of caspofungin for treatment of invasive aspergillosis in patients refractory to or intolerant of conventional antifungal therapy. Clin Infect Dis **2004**; 39:1563–71.
8. Aliff TB, Maslak PG, Jurcic J, et al. Refractory *Aspergillus pneumonia* in patients with acute leukemia: successful therapy with combination caspofungin and liposomal amphotericin. Cancer **2003**; 97:1025–32.
9. Candoni A, Mestroni R, Damiani D. Caspofungin as first line therapy of pulmonary invasive fungal infections in 32 immunocompromised patients with hematologic malignancies. Eur J Haematol **2005**; 75:227–33.
10. Cornely OA, Maertens J, Bresnik M, et al. Liposomal amphotericin B as initial therapy for invasive mold infection: a randomized trial comparing a high-loading dose regimen with standard dosing (AmBiLoad Trial). Clin Infect Dis **2007**; 44:1289–97.
11. Cornely O, Maertens J, Winston DJ, et al. Posaconazole vs. fluconazole or itraconazole prophylaxis in patients with neutropenia. New Engl J Med **2007**; 356:348–59.

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Mucosal Leishmaniasis and Miltefosine

To the Editor—Because of its significant morbidity and mortality, mucosal leishmaniasis (ML) is an important endemic disease and a public health problem in underdeveloped countries. The increase in ecological tourism has resulted in the extension of this problem to developed countries. The current treatment for ML