among clinicians, laboratory staff, and public health professionals can assist in minimizing the false diagnosis of TB.

REFERENCES

1. Aber VR, Allen BW, Mitchison DA, Ayuma P, Edwards EA, Keyes AB. Quality control in tuberculosis bacteriology, 1: laboratory studies on isolated positive cultures and efficiency of direct smear examination. *Tubercle* 1980;61:123-133.
2. Braden CR, Templeton GL, Stead WS, Bates JH, Cave MD, Valway SE. Retrospective detection of laboratory cross-contamination of *Mycobacterium tuberculosis* cultures with use of DNA fingerprint analysis. *Clin Infect Dis* 1997;24:35-40.
3. Conville PS, Witebsky FG. Inter-bottle transfer of mycobacteria by the BACTEC 460. *Diagn Microbiol Infect Dis* 1989;12:401-405.
4. Frieden TR, Woodley CL, Crawford JT, Lew D, Dooley SM. The molecular epidemiology of tuberculosis in New York City: the importance of nosocomial transmission and laboratory error. *Tubercle and Lung Disease* 1996;77:407-413.
5. Mauer JR, Desmond EP, Lesser MD, Jones WD. False positive cultures of *Mycobacterium tuberculosis. Chest* 1984;86:439-443.
6. Mitchison DA, Keyes AB, Edwards EA, Ayuma P, Byfield SP, Nunn AJ. Quality control in tuberculosis bacteriology, 2: the origin of isolated positive cultures from the sputum of patients in four studies of short course chemotherapy in Africa. *Tubercle* 1980;61:135-144.
7. Murray PR. Mycobacterial cross-contamination with the modified BACTEC 460 TB system. *Diagn Microbiol Infect Dis* 1991;14:33-35.
8. Salfinger M. Role of the laboratory in evaluating patients with mycobacterial disease. *Clinical Microbiology Newsletter* 1995;17:14.
9. Wurtz R, Demarais P, Trainor W, McAuley J, Kocka F, Mosher L, et al. Specimen contamination in mycobacteriology laboratory detected by pseudo-outbreak of multidrug-resistant tuberculosis: analysis by routine epidemiology and confirmation by molecular technique. *J Clin Microbiol* 1996;34:1017-1019.
10. Burman WJ, Stone BL, Reves RR, Wilson ML, Yang Z, El-Hajj H, et al. The incidence of false-positive cultures for *Mycobacterium tuberculosis. Am J Respir Crit Care Med* 1997;155:321-326.
11. van Embden JDA, Cave MD, Crawford JT, Dale JW, Eisenach KD, Gicquel B, et al. Strain identification of *Mycobacterium tuberculosis* by DNA fingerprinting: recommendations for a standardized methodology. *J Clin Microbiol* 1993;31:406-409.
12. Kent PT, Kubica GP. *Public Health Mycobacteriology—A Guide for the Level III Laboratory.* Atlanta, GA: US Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention; 1985.
13. Centers for Disease Control and Prevention. *Mycobacterium tuberculosis—assessing your laboratory.* Atlanta, GA: CDC; 1995.
14. Dunlap NE, Harris RH, Benjamin WH, Harden JW, Hafner D. Laboratory contamination of *Mycobacterium tuberculosis* cultures. *Am J Respir Crit Care Med* 1995;152:1702-1704.
15. Vannier AM, Tarrand JJ, Murray PR. Mycobacterial cross contamination during radiometric culturing. *J Clin Microbiol* 1988;26:1867-1868.
16. Fischl MA, Uttamchandani RB, Daikos GL, Poblete RB, Moreno JN, Reyes RR, et al. An outbreak of tuberculosis caused by multiple-drug-resistant tubercle bacilli among patients with HIV infection. *Ann Intern Med* 1992;117:177-182.
17. Valway S, Dooley S, Ikeda R, Jereb J, Kent J, Onorato I. False positive diagnosis of multidrug resistant tuberculosis due to laboratory contamination. *Tuber Lung Dis* 1994;75:S42. Abstract.
18. MacGregor RR, Clark LW, Bass F. The significance of isolating low numbers of *Mycobacterium tuberculosis* in culture of sputum specimens. *Chest* 1975;68:518-523.
19. Small PM, McClenny NB, Singh SP, Schoolnik GK, Tomkins LS, Mickelsen PA. Molecular strain typing of *Mycobacterium tuberculosis* to confirm cross-contamination in the mycobacteriology laboratory and modification of procedures to minimize occurrence of false-positive cultures. *J Clin Microbiol* 1993;31:1677-1682.
20. Daley CL, Small PM, Schecter GF, Schoolnik GK, McAdam RA, Jacobs WR, et al. An outbreak of tuberculosis with accelerated progression among persons infected with the human immunodeficiency virus: an analysis using restriction fragment length polymorphisms. *N Engl J Med*

Effect of Granulocyte Colony-Stimulating Factor on Nosocomial Infections

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Investigators from the University of Massachusetts Medical Center in Worcester conducted studies to determine whether the use of prophylactic recombinant human granulocyte colony-stimulating factor (filgrastim) reduces the frequency of nosocomial infections in patients with either acute traumatic brain injury or cerebral hemorrhage. The study was a randomized, placebo-controlled, double-blind, multicenter phase II study. It was conducted in intensive-care units of seven medical centers.

Study patients were selected who had either acute traumatic brain injury or cerebral hemorrhage who were intubated within 6 hours of admission and who were expected to be ventilated for more than 72 hours. Patients were randomized to receive daily subcutaneous injections of placebo (n=21) or one of two doses of filgrastim (75 μg [n=20] or 300 μg [n=20]) for 10 days or until the absolute neutrophil count was >75,000 cells/mm^3 or until extubation. End points included increase in absolute neutrophil count, safety of filgrastim, and frequency of nosocomial infections (pneumonia, bacteremia, and urinary tract infection).

Filgrastim caused a dose-dependent increase in absolute neutrophil count. There were no differences in the frequency of pneumonia or urinary tract infection; however, there was a dose-dependent decrease in the frequency of bacteremias ($P<.05$). Adverse events were similar among the three groups. There was one case of acute respiratory distress syndrome in the placebo group.

The authors concluded that, in this patient population, use of filgrastim was safe, and the agent appeared to reduce the risk of primary bacteremias but had no beneficial effects on mortality, length of stay, or other nosocomial infections.

FROM: Heard SO, Fink MP, Gamelli RL, Solomkin JS, Joshi M, Trask AL, etc. Effect of prophylactic administration of recombinant human granulocyte colony-stimulating factor (filgrastim) on the frequency of nosocomial infections in patients with acute traumatic brain injury or cerebral hemorrhage. The Filgrastim Study Group. *Crit Care Med* 1998;26:748-754.