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Reply

Stir—The development of nonsteroidal antiinflammatory agents (NSAIDS) by the pharmaceutical industry has been a boon to medical science, and their clinical usefulness has outweighed their serious side effects, such as gastrointestinal bleeding and renal failure, by orders of magnitude. For this reason, the U.S. Food and Drug Administration (FDA) has approved the over-the-counter use of these drugs. As a result, they are used daily for their approved indications such as treatment of gout, rheumatoid arthritis and osteoarthritis, and menstrual cramps. Patients with these conditions have benefited greatly. However, because of the availability of these drugs and their perceived safety, people around the world are treating themselves with NSAIDS for many maladies.

Early in the course of streptococcal toxic shock syndrome and staphylococcal toxic shock syndrome, the symptoms may resemble a viral-like infection, and patients are likely to take this class of medications for symptomatic relief. Frequently, the symptoms, i.e., pain, swelling, fever, and chills, may abate. In some cases physicians have prescribed these medications to such patients because they, too, have diagnosed a viral-like syndrome. As most infectious disease physicians know, many of these patients later develop shock, organ failure, and necrotizing fasciitis. NSAIDS were never intended by the manufacturer or the FDA to be used to treat bacterial infections in the absence of antibiotic therapy.

Although we proposed some mechanisms whereby NSAIDS might alter the host response and worsen the outcome for patients, the main purpose of our recent article [1] was to alert physicians to the potentially harmful effects of NSAIDS on incubating bacterial infections that were not being treated by antibiotics. We advocated caution in this area until clinical and basic studies have resolved these questions: Do NSAIDS lower the threshold for infection? Do NSAIDS alter the signs, symptoms, and course of infection?

These types of questions are difficult to answer in clinical studies, and Dr. Barnham and his colleagues are to be commended for their thoughtful approach and interesting results. Dr. Barnham’s results certainly point out that self-treatment with NSAIDS by the laity occurs at an alarming rate. These results have shown a significant correlation between NSAID use and the development of severe streptococcal infections.

Infectious disease physicians rely heavily upon the clinical presentation of disease for diagnosis. As such, fever, the appearance of the patient, the presence of swelling, and the presence or absence of pain and tenderness greatly influence the development of the clinical impression. It is becoming clearer, with the high prevalence of NSAID use by the general population, that in the future the traditional signs and symptoms of disease may need to be redefined. Just as the general population find themselves in an era of “emerging infectious diseases,” so they may also be in a period of self-induced immunosuppression. Perhaps the two are related. In the past, nature has generally favored the healthy human host. Perhaps humans are doing their best to reverse this trend.

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Reference


Transmission of Tuberculosis During Medical Procedures

Stir—Sepkowitz [1] provided an excellent review on the transmission of tuberculosis. Unfortunately, his discussion did not address activities that lead to iatrogenic aerosol production and disease in health care workers. Such high-risk activities, especially cough-inducing procedures and autopsies, merit special attention if we are to prevent transmission of Mycobacterium tuberculosis in health care settings.

Sepkowitz cited two published reports on outbreaks of tuberculosis due to nosocomial transmission in which the sputum smear from the source patient was negative for acid-fast bacilli (AFB). Both outbreaks involved iatrogenic aerosol production. In the first report [2], the patient underwent fiberoptic bronchoscopy and endotracheal intubation in a poorly ventilated intensive care unit; multiple sputum smears were negative for AFB, but cultures were positive for M. tuberculosis. Ten (77%) of the 13 health care workers present during the procedures had tuberculin skin test conversions. Catanzaro [2] estimated that 250 infectious units per hour were generated during these procedures; this estimate is more than two orders of magnitude larger than that of Riley et al. [3], who reported that 1.25 infectious units per hour were generated by patients with tuberculosis who recently began receiving appropriate therapy. Griffith and colleagues [4] reported a similar conversion rate of 76% (13 of 17 tuberculin skin tests) among health care workers exposed to a patient with unrecognized tuberculosis who underwent endotracheal intubation, endotracheal suctioning, and mechanical ventilation. Three of the exposed health care workers developed active tuberculosis. None of the eight members of the patient’s family, who were exposed over the previous 2 weeks, had positive tuberculin skin tests, suggesting a lack of transmission before these procedures were performed.
In the second report cited by Sepkowitz [5], at least 47 health care workers had tuberculin skin test conversions after exposure to a smear-negative patient who underwent endotracheal intubation in an emergency department where the air was recirculated in the ventilation system. Six workers and probably one patient developed active tuberculosis as a result. There was no evidence of transmission to the health care workers exposed to this patient before his intubation.

In a cross-sectional correlate to these reports on outbreaks, Malasky and colleagues [6] observed an increased risk of tuberculin skin test conversion among pulmonary physicians in training (7 [11%] of 62) in comparison with infectious disease physicians in training (1 [2.4%] of 42). These authors suggested that exposures to tuberculous aerosols during cough-inducing procedures could account for this increased risk.

Noninvasive cough-inducing procedures, specifically the administration of aerosolized pentamidine, have also been associated with transmission of M. tuberculosis [7]. Other unusual causes of iatrogenic aerosolization have included jet irrigation of a tuberculous abscess [8].

The most infectious tuberculous aerosols reported to date have been generated during autopsy procedures. Kantor and colleagues [9] reported an outbreak associated with a patient who had unsuspected disseminated tuberculosis. The pathologist and all three of the autopsy room staff were infected in spite of ventilation with 11 air changes per hour. An electric bone saw was implicated as the source of an infectious aerosol, but there were also a large number of AFB in the patient’s pulmonary exudate. AFB smear and culture of the one sputum specimen obtained from the patient during life were negative, but there were also a large number of AFB in the patient’s smear-negative case. The original article on the transmission to the health care workers exposed to this patient did not provide smear results [2] and was not included the reports of outbreaks related to administration of aerosolized pentamidine, and I appreciate Dr. Fennelly’s reminder.

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Reply
SIR—Dr. Fennelly has emphasized the preventable aspects of nosocomial spread of Mycobacterium tuberculosis, specifically the creation of aerosols by such activities as endotracheal suctioning and performance of autopsies on patients with unsuspected tuberculosis. As he notes, such actions may seemingly enhance transmission.

I would point out that the two reports I cite as examples of the transmission of smear-negative disease differ from those that Dr. Fennelly comments upon. The oft-cited report by Catanzaro [1] did involve a smear-negative case. The original article on the other case cited by Fennelly as smear-negative (the emergency department case) did not provide smear results [2] and was not cited by me in this context. The additional smear-negative case I cited was from an outbreak in an AIDS unit in an Italian hospital where aerosolization was clearly not a factor [3]; rather, the rapid progression from exposure to development of active disease in HIV-infected patients was the important observation made in this report. In my article, I reviewed the “coughing literature” but did not include the reports of outbreaks related to administration of aerosolized pentamidine, and I appreciate Dr. Fennelly’s reminder.