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The Other "Cotton Fever"

Dzanan Ramik, MD* and Yehia Y. Mishriki, MD, FACP†

Abstract: "Cotton fever" is a normally benign syndrome that may occur in intravenous drug users who have filtered their drug through cotton before injecting it. It is felt to be due to either a hypersensitivity to pyrogenic components in cotton or a reaction to endotoxin from *Enterobacter agglomerans*, a frequent colonizer of cotton plants. It presents with fever, rigors, headache, myalgias, and abdominal pain. Blood cultures are normally sterile, and patients recover with only supportive care. There has been 1 case report of cotton fever in association with *E. agglomerans* bacteremia.

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The febrile intravenous drug abuser is often diagnostically challenging. Fever, in such a patient, can have infectious, neoplastic, autoimmune, or allergic etiologies. Noninfectious causes account for a significant percentage of such cases and are considered once more serious considerations have been ruled out. We report a patient with "cotton fever," a usually benign but often quite symptomatic febrile syndrome seen in some intravenous drug users.

CASE REPORT

A 36-year-old white man presented to the emergency department with a chief complaint of cotton fever. The fever began the previous day within 2 hours of an intravenous injection of Dilaudid. This was followed by headache, myalgias, muscle spasms of the upper and lower extremities, nausea, vomiting, and rigors. The rigors and myalgias resolved overnight, but the fever and headache persisted, prompting him to seek medical care. The patient admitted that he had tried to extract a remnant of Dilaudid from a cotton ball he had previously used to filter the opiate by dissolving it in a solvent and heating it. He had then injected the solution.

Vital signs on admission included a blood pressure of 120/58 mm Hg, respiratory rate of 22 breaths per minute, pulse rate of 122 beats per minute, and temperature of 100.5°F. Oxygen saturation by pulse oximetry was 92%. On examination, he was awake and alert but seemed uncomfortable. His pupils were constricted but reacted to light. There was no nuchal rigidity or cervical lymphadenopathy. Lungs were clear to auscultation, and the cardiac examination was normal except for the tachycardia. The abdomen was flat and diffusely tender to palpation but was without involuntary guarding. The liver span was normal, and the spleen was not palpable. His skin was warm and dry and without any petechiae or purpurae.

Pertinent laboratory studies included a white blood cell count of 11,600/ μ L with 23% band forms. Aspartate aminotransferase was elevated at 217 mg/dL (normal 20–40 mg/dL). All other liver enzymes were normal as were his electrolyte levels. A chest radiograph was within normal limits, and an electrocardiogram was normal save for a sinus tachycardia.

Over the course of the ensuing 2 days, the patient defervesced, and his abdominal pain and headache resolved spontaneously with only supportive care. A set of blood cultures obtained on admission remained sterile for 5 days.

DISCUSSION

The febrile intravenous drug abuser presents a diagnostic quagmire. Infections such as pneumonia, endocarditis, and osteomyelitis are the most common causes of fever in these patients. However, a significant percentage is found not to have any serious infection, and the fever is ascribed to other causes.¹ Cotton fever is a street term for a febrile reaction that occurs after the injection of a drug, usually heroin, which has been filtered through cotton. This syndrome of fever, leukocytosis, and abdominal pain occurring soon after the injection of a drug that has been filtered through cotton has been well described in the medical literature^{2,3} but is still not well appreciated by many physicians. It has been theorized that this syndrome is due to either a hypersensitivity to pyrogenic materials found in cotton or a reaction to endotoxin from *Enterobacter agglomerans* (since renamed *Pantoea agglomerans*), a gram-negative bacterium that frequently colonizes cotton and other plants.⁴ One report described an intravenous drug user with presumed cotton fever who was found to have a bacteremia due to *E. agglomerans* and who required treatment with trimethoprim-sulfamethoxazole.⁵ In general, however, patients with cotton fever have a self-limited disease without an associated bacteremia and only require supportive medical care. Nevertheless, despite the usual low pathogenicity of *E. agglomerans*, it has been implicated as the cause of serious infections such as spondylodiscitis,⁶ blood transfusion or infusion-associated sepsis,⁷ septic arthritis⁸ and osteomyelitis⁹ (most often because of plant thorn inoculation), and various eye infections.¹⁰

CONCLUSIONS

Cotton fever is a benign febrile disorder that occurs in intravenous drug users who have filtered their solubilized drug through cotton before injecting it. Blood cultures are usually sterile, and the disorder runs its course in 1 or 2 days. However, there has been 1 case of cotton fever associated with *E. agglomerans* bacteremia; therefore, vigilance for infection is mandatory.

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