

# Ciprofloxacin-Induced Psychosis

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A 64-year-old male patient was admitted with fever and productive cough. Past medical history included chronic obstructive pulmonary disease (COPD), bronchiectasis, and hypertension. He was regularly treated with ramipril. Auscultation of the chest revealed mild expiratory wheezes in both lung fields. Laboratory tests were normal aside from leukocytosis. A chest radiograph demonstrated emphysematous changes and ill-defined pulmonary nodular opacities. The patient was diagnosed with COPD exacerbation and possible infected bronchiectasis. Cefuroxime and ciprofloxacin were given along with ipratropium bromide inhalations. The patient's condition gradually improved. Four days later, the patient was disoriented and confused. Visual delusions were noted: he reported "people walking on his stomach" and that "his hands were eating." He was not aware of time and place. No signs of head trauma were noted. A neurologic examination did not reveal motor or sensory deficits. A computerized tomography of the head was normal. Room air oxygen saturation was 94%. Blood gases, electrolytes, calcium, ammonia, liver, and renal indices were within normal limits. A urine toxicology screen was negative for benzodiazepines or opiates. Ciprofloxacin-induced psychosis was suggested, and the antibiotic was stopped. The patient was evaluated by a psychiatrist, who agreed with the diagnosis of acute psychosis. Twenty-four hours after stopping ciprofloxacin, the patient's cognitive state returned to normal.

Fluoroquinolones are used extensively in diverse infectious conditions. Frequent adverse events include nausea, diarrhea, and abnormal liver function tests, according to the ciprofloxacin drug data sheet (1). The risk of tendinopathy is increased. The QT interval may be prolonged. With regard to neurologic disorders, convulsions, dizziness, tremors, and confusion have been reported. Postmarketing surveillance studies have revealed hallucinations and toxic psychosis as additional, albeit rare, adverse events with ciprofloxacin therapy (2). Grimm et al. reported ciprofloxacin-induced schizophrenia in a female patient (3). In their report, symptoms resolved only after discontinuation of cipro-

floxacin in addition to treatment with lorazepam and aripiprazole. A case of acute psychosis following the use of topical ciprofloxacin was described by Tripathi et al. (4).

The mechanism by which ciprofloxacin induces neuropsychiatric manifestations is not clear. In a review by Tomé and Filipe, it was suggested that quinolones competitively bind to the gamma-aminobutyric acid receptors, leading to stimulation of the central nervous system (5). With regard to the dose-effect relationship, neuropsychiatric adverse events were noted with therapeutic and with low doses of ciprofloxacin (5).

Given the widespread use of quinolones and, specifically, ciprofloxacin, it is important to remain vigilant in recognizing this rarely reported but serious adverse effect.

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