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Moxifloxacin-induced rhabdomyolysis

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Dear Editor,
Moxifloxacin is a new quinolone used for treatment of sinusitis, community acquired pneumonia and intra-abdominal infections. Adverse effects reported include nausea, vomiting, diarrhea, abdominal pain, insomnia, headache, hypokalemia, hypoglycemia or hyperglycemia, anemia, increase in aminotransferases and musculoskeletal disorders like arthralgia, myalgia and tendon rupture. Rare, but potentially life-threatening adverse effects include seizures and drug-induced QT prolongation [1]. We recently encountered another rare, but serious, adverse effect in a 75-year-old female who was admitted to our ICU with a large left cerebellar infarct causing obstructive hydrocephalus. She underwent ventriculoperitoneal shunt surgery and was being mechanically ventilated. On Day 2, she developed catheter associated urinary tract infection, which was treated with intravenous moxifloxacin in a dose of 400 mg once daily. Urine culture showed infection with *Escherichia coli* which was sensitive to a number of antibiotics including moxifloxacin. Four days later, she developed oliguria, cola colored urine and serum creatinine increased overnight to

4.5 mg/dl. Lab tests revealed hyperkalemia and creatinine phosphokinase levels of 61,000U/L (normal range 22–198 U/L). After excluding other causes of rhabdomyolysis, quinolone-induced rhabdomyolysis was suspected. Moxifloxacin was omitted and cotrimoxazole was started instead. Alkaline diuresis was instituted and there was a gradual reduction of the serum creatinine and potassium with normalization of urine color over the next 4 days. Patient was discharged to the wards 4 days after the event. The urinary tract infection cleared with cotrimoxazole treatment for 7 days. She was discharged from the hospital on Day 34.

Common causes of rhabdomyolysis in a patient who has been in the hospital for a week include hyperglycemic with hyperosmolar state, hyper- or hyponatremia, hypokalemia, hypocalcaemia, hypophosphatemia, hypothyroidism, hyperthermia, hypothermia and status epilepticus; these were ruled out in our patient. A diagnosis of drug-induced rhabdomyolysis was suspected and a review of literature revealed drugs commonly causing rhabdomyolysis included statins, gemfibrozil, amphetamine, amphotericin, clofibrate, cyclosporin and cocaine. Quinolones too can rarely cause rhabdomyolysis. Petitjeans et al. [2] report 27 cases from the database of the World Health Organization Collaborating Centre for Drug Monitoring in Uppsala, Sweden, where quinolones were suspected to cause rhabdomyolysis. A handful of cases of rhabdomyolysis following treatment with levofloxacin, ofloxacin and gatifloxacin have been reported, including at least three with a fatal outcome [3, 4].

Rhabdomyolysis with moxifloxacin has not been reported before, although a few equivocal reports exist in German literature. However, since moxifloxacin belongs to the same

class of antibiotics (fluoroquinolones) and none of the other drugs prescribed to the patient have been reported to cause rhabdomyolysis, we attributed the rhabdomyolysis to moxifloxacin and the drug was discontinued. According to Naranjo's algorithm this adverse reaction could be categorized as probable [5].

With increasing use of fluoroquinolones in critically ill patients, clinicians must remember this class of drugs (including newer agents like moxifloxacin) in the list of causes of rhabdomyolysis in an ICU patient. They must be used with caution especially in patients predisposed to muscle breakdown due to other causes like metabolic derangements or seizures.

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