

ACUTE FLUORIDE POISONING LEADING TO  
FATAL HYPERKALEMIA

by

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A 25-year old colored man was admitted to the emergency room about 2.5 hours following intentional ingestion of rat poison, identified as sodium fluoride. The examination was essentially unremarkable except for tachycardia with 160 beats per minute and the presence of gallop rhythm, slight hemoconcentration with a hematocrit value of 40 percent, and hemoglobin level of 16.4g per 100 ml.

Forty-five minutes later, the ECG showed considerable peaking of the T-wave. Approximately one hour after admission, the patient developed ventricular arrhythmia which failed to respond to intravenous administration of lidocaine and repeated defibrillation. The patient developed profuse drainage of bright red blood from the nasogastric tube. At autopsy, marked congestion of the lungs and liver, mild left ventricular hypertrophy and marked hyperemia of the serosa of stomach and esophagus were noted.

In two mongrel dogs, which were given 500 mg sodium fluoride as 0.8M solution in 5% dextrose water during a 45-minute period, peaking of T-waves in both standard and precordial leads were reproduced. Immediately prior to death, transient ST sagging in the anterolateral leads was quickly followed by respiratory arrest, bradycardia and ventricular fibrillation. Serial electrolyte determinations revealed a progressive rise in potassium level in the absence of any evidence of an acid-base disturbance. The final potassium levels were 6.9 and 6.1 mEq/l respectively in the two experimental animals.

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FLUORIDE