

High prevalence of hypokalemia after acute acetaminophen overdose: Impact of psychiatric illness

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Abstract

Background: Hypokalemia is not an isolated disease but an associated finding in a number of different diseases. It is also a commonly neglected condition among patients with acute acetaminophen overdose. **Objectives:** This study intended to determine the prevalence of hypokalemia and its clinical correlates in acute psychiatric illness among hypokalemic and normokalemic patients after acetaminophen overdose. **Methods:** This is a retrospective cohort study of hospital admissions for acute acetaminophen overdose conducted over a period of 5 years from 1 January 2004 to 31 December 2008. Demographic data and different types of psychiatric illness were compared between hypokalemic and normokalemic patients. Hypokalemia was predefined by a serum concentration <3.5 mmol/L. Statistical Package for Social Sciences (SPSS) 15 was used for data analysis. **Results:** Two hundred and eighty patients out of 305 admissions were studied. Hypokalemia was found in 63.6% of patients with a higher prevalence in the presence of psychiatric illness (67.7%). Hypokalemic patients were significantly associated with the presence of major depression ($p = .04$), adjustment disorder ($p < .001$), anxiety ($p = .01$), and suicidal attempts ($p = .04$). **Conclusion:** Hypokalemia was common among patients with psychiatric illness and acute acetaminophen overdose.

Keywords

acetaminophen, hypokalemia, overdose, potassium, psychiatric illness

Introduction

Deliberate self-poisoning (DSP) is recognized as a major cause of suicide around the world.¹ Acetaminophen (Paracetamol) is the most common drug employed in DSP in many countries,^{2,3} including Malaysia.⁴ Despite excellent safety in therapeutic doses of acetaminophen, it is also one of the leading causes of severe hepatic necrosis.⁵

Acetaminophen overdose may be accompanied by electrolyte disturbances including hypokalemia, and these appear to be independent of the hepatotoxic effects.⁶ These electrolyte changes appear to be due to the increase in fractional renal excretion of potassium, but the underlying cellular mechanisms by which acetaminophen might alter electrolyte transport are still unknown.⁶⁻⁹ In some cases, hypokalemia may be severe, reaching a level of 2.3 mmol/L after reported ingestion of 48 g of acetaminophen.⁸

Hypokalemia, an easily identifiable and clinically important condition in clinical settings, has received little attention from researchers worldwide. Not only is hypokalemia associated with frequent cardiac and neuromuscular complications, but its effect on mental function may also exacerbate psychiatric disturbances.^{10,11} Both anxiety¹² and intense exercise¹³

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