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Metabolic acidosis: a very rare complication of ibuprofen overdose

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Objective: Ibuprofen is a commonly ingested drug for deliberate self-poisoning due to its ready availability as an analgesic. Like most non-steroidal anti-inflammatory drugs it does not appear to be associated with major toxicity, but there are reports of metabolic acidosis with larger doses. This study aimed to investigate the frequency of metabolic acidosis in a large series of ibuprofen overdoses.

Methods: All presentations of ibuprofen overdose to a tertiary toxicology service from 2010 to 2018 were identified from a prospective database. Only patients ingesting >800g were included. The following data was extracted: demographics, co-ingestants, complications (coma [GCS<9], acute kidney injury, seizure), treatments and outcomes (length of stay [LOS], intensive care [ICU] admission, death). In retrieved additional, medical records were for the additional information: gastrointestinal symptoms (nausea, vomiting or abdominal pain) and blood gas (nausea, vomiting or abdominal pain) and blood gas result. Metabolic acidosis was defined as a pH < 7.35.

Results: There were 241 ibuprofen overdoses with blood gas analysis available from a total of 351. The 110 patients without blood gases were younger, ingested smaller doses and had a shorter LOS. The 241 had a median age of 29y interquartile range [IQR]:21-39y), 162 (67%) were female and ingested a median dose 4g (IQR: 2.4-6g; range: 1-36g). The commonest co-ingestants were paracetamol, alcohol, codeine, benzodiazepines, selective serotonin reuptake inhibitors and atypical antipsychotics (mainly quetiapine). The median LOS was 16h (IQR:9-24h) and five were admitted to ICU. There were no deaths, two patients had seizures and one developed an acute kidney injury (AKI); all of the later coingested other drugs. The patient with AKI developed this secondary to gastrointestinal symptoms. Seizures were related to co-ingestants (tramadol and valproate). 76 developed metabolic acidosis, but none with complications and 68 had gastrointestinal symptoms. Patients ingesting ibuprofen alone ingested significantly higher doses (p=0.012), but only 9 had gastrointestinal symptoms and 9 metabolic acidosis. There wasn't an association between dose and pH, except possibly for massive ingestions (>30g).

Conclusion: Ibuprofen overdose uncommonly causes metabolic acidosis, without any significant complications. Minor gastrointestinal symptoms are common. In the majority of cases other drugs were also ingested and the other drugs appeared to result in a longer LOS and greater requirement for critical care services.