Ethylene Glycol Poisoning and Lactate Concentrations

To the Editor:

We were interested to read the article by Manini et al. (1), which confirmed previous observations that a severe ethylene glycol poisoning may lead to falsely elevated lactate levels (2). High lactate levels were indeed measured by enzymatic spectrophotometry (Integra analyzer) but excluded by a specific GC analysis. A linear correlation was nicely demonstrated between the serially determined but falsely elevated serum lactate and the serum concentration of glycolate. This main inorganic acid metabolite of ethylene glycol is indeed responsible for the metabolic acidosis frequently encountered in this type of poisoning.

The authors do not report whether also other substances interfered with the lactate measurements. We have also reported a peculiar case of a man who erroneously ingested a large amount of propylene glycol (3). The high anion gap and the erroneously measured lactate levels, now on a Radiometer, were not related to any breakdown product of this glycol but due to the real presence and accumulation of D-lactate. The erroneously false lactate levels on the Radiometer (point-of-care) were therefore not due to the usual L-lactate, but due to the huge amounts of this D-lactate in blood. Propylene glycol may indeed be metabolized into D-lactate by colonic bacteria (3).

The ingestion of different glycols in humans may therefore lead to falsely elevated lactate levels on different analyzers by the apparition of several interfering substances, either metabolites or D-lactate (1–3). This may be due to a lack of specificity of the lactate oxidase enzyme used in spectrophotometric analyzers and point-of-care tests for lactate (1,4). In conclusion, both this (1) and our case (3) demonstrate that very high lactate levels in poisoning must be confirmed by more specific tests before any conclusion can be taken into account. These analytical observations might be of clinical importance, as elevated lactate levels are frequently considered as a main guidance for therapy, as well as in intoxications.

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References