Relevance of Toxicological Screening for Chloroquine in Nonmalarious Areas

To the Editor:

Because of the high number of people traveling abroad to malarious areas, the prescription of chloroquine is very widespread. Consequently, a risk for chloroquine intoxication also exists in nonmalarious areas, as exemplified by the subsequently described car accident.

Chloroquine is primarily used as a suppressive prophylactic for malaria infections, but it is also prescribed as therapy for rheumatoid arthritis. The symptoms of acute oral poisoning include hypokalaemia, nausea, hoarseness, hypotension or cardiopulmonary arrest, convulsions, and coma (1,2).

A 30-year-old woman was found dead and lying in a prone position in a shallow ditch. Her badly damaged car was found 25 m away. The external examination was performed shortly after death. Her clothes were soiled with mud and water. The woman was normally built, weighing 65 kg and measuring 163 cm in height. Recent traumatic skin lesions were found on the face, on both arms, on the knees, and on the right foot. Multiple rib fractures were located by palpitation on the left chest. Mud was found in the mouth and in both nostrils. Blood was punctured in the right subclavicular region for toxicological analysis. After this examination, it was concluded that the woman had traumatic lesions compatible with a brusque frontal deceleration of the car. Footsteps led to the ditch where the woman eventually fell into the water. The mud in her mouth and nostrils indicated terminal aspiration of water.

A comprehensive toxicological screening was performed on the blood sample, including headspace analysis for volatiles and homogenous enzyme multiplied immunoassay or radioimmunoassay for a large number of drugs or classes of drugs (3). In the blood, neither ethanol nor any of the screened drugs or classes of drugs was present. However, a high-performance liquid chromatographic screening procedure with diode array detection (HPLC–DAD) for basic drugs demonstrated the presence of chloroquine in the blood (4). The identity was confirmed by gas chromatographic analysis with nitrogen-phosphorus and mass spectrometric detection (3). Quantitative analysis was performed by HPLC–DAD using quinine as the internal standard. A chloroquine concentration of 31.0 µg/mL was found, which is among the higher blood levels reported (5). In 91 cases of chloroquine poisoning, no patients survived with a blood chloroquine concentration exceeding 8 µg/mL (2).

Undoubtedly, a combination of modes of suicide was undertaken. The following reconstruction can be proposed. At first, the victim took a potentially lethal dose of chloroquine, as substantiated by the very high chloroquine level in the blood. She then crashed her car into a tree at a high rate of speed. Already injured, the decedent then either walked or fell approximately 20 m further into the ditch where she eventually drowned. However, the exact contribution of chloroquine to this fatality is difficult to evaluate because of the well-known increase in the postmortem chloroquine level in the blood relative to the antemortem concentration (6).

This case demonstrates the relevance of including chloroquine in systematic toxicological screening, even in nonmalarious areas. Extra opportunities for intoxication or suicide are created when chloroquine prescriptions are not limited to the precise amount needed for malaria prophylaxis. The postmortem redistribution of chloroquine should also be kept in mind.

This study was supported in part by the Fund for Medical Scientific Research (FGWO) (grant 3.0002.93) and by the national Fund for Scientific Research (FWO) through a bursary to E. Meyer.

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References


