Endoscopic removal of pharmacobezoar of slow release theophylline

Overdose with slow release theophylline preparations can result in sustained toxic serum concentrations and is therefore associated with appreciable morbidity and mortality. We report a case of such an overdose in which absorption of the drug and systemic toxicity were further prolonged by aggregation of particles in the stomach.

Case report

An 18 year old woman presented to the casualty department having taken about 60 of her mother's 300 mg slow release theophylline tablets (Theo-Dur, Fisons UK Ltd) two to three hours previously. On examination she was flushed, tremulous, and agitated but fully conscious. Electrocardiographic monitoring showed a sustained sinus tachycardia of 132 beats/min. Hypokalaemia was noted—the serum potassium concentration being 2.5 mmol/litre. The serum theophylline concentration was 350 µmol/litre (therapeutic range 55-110 µmol/litre; 10-20 mg/litre). Gastric lavage with a wide bore tube failed to yield any tablet particles. Activated charcoal (50 g) was then administered orally. Physiological saline and potassium chloride were infused intravenously at rates of 100 ml/h and 7 mmol/litre, respectively. Over the next 12 hours she became more agitated and tremulous, her heart rate increased to 150-160 beats/min, and she developed persistent vomiting. The theophylline concentration 12 hours after admission had risen to 490 µmol/litre (88 mg/litre). Gastroscopy with a GIFQ endoscope (Key Med Instruments, Southend on Sea, was carried out under diazepam sedation and showed a white, friable bolus of congealed tablets 2 cm in diameter lying on the greater curvature of the stomach. This was grasped in a Dormia basket and removed. The stomach was then irrigated by water jet and all visible tablet particles aspirated. After endoscopy 20 g mannitol in 2 litres of water was administered orally over two hours. Three hours after endoscopy the theophylline concentration had fallen to 312 µmol/litre (56 mg/litre). Over the next 12 hours her symptoms abated and both heart rate (figure) and serum potassium concentration returned to normal. She remained free of symptoms thereafter.

Comment

Overdose with any preparation containing theophylline may not only result in distressing vomiting, tremor, and agitation but cause profound hypokalaemia, generalised convulsions, and serious cardiac arrhythmias, mortality as high as 50% being reported.1 Delayed absorption from slow release preparations will prolong and may postpone toxic effects; absorption of Theo-Dur, for example, continues for up to 24 hours after ingestion.2 Perhaps as a consequence of the resultant prolonged exposure to the stimulant effects of theophylline a fatal outcome has been reported after ingestion of as little as 6 g of the slow release preparation. An intragastric aggregation of tablets, with consequent gradual leaching of active drug from the "bezozar," as described in this case, may further delay absorption and prolong the duration of toxicity.

The formation of similar intragastric concretions or bezoars has been reported after ingestion of meprobamate and aluminium hydroxide in large quantities, as in overdose.3 4 In such circumstances gastric lavage, even if performed soon after ingestion of the drug, as in this case, will prove ineffective in removing the drug from the stomach. The rapid fall in theophylline concentration and heart rate seen in this case after endoscopic removal of the tablet bolus suggests that this manoeuvre was highly effective in preventing further absorption of the drug, for otherwise all the serum theophylline concentration would have continued to rise for at least a further 12 hours. We therefore propose that endoscopy should be considered in cases of overdose of slow release theophylline in which clinical symptoms and serial theophylline concentrations suggest continuing drug absorption.

We thank Dr H Cohen for permission to report on his patient, the staff of the gastrointestinal endoscopy unit for their help, and Mrs J Rostrom for expert secretarial help.


Imaging in rheumatoid arthritis using liposomes labelled with technetium

Liposomes are small microscopic spheres composed of one or more concentric phospholipid bilayers.1 After intravenous injection they are taken up by the cells of the reticuloendothelial system and are found mainly in the Kupffer cells of the liver and the macrophages of the bone marrow and spleen. As the synovial tissue of patients with rheumatoid arthritis is rich in phagocytic cells we undertook a preliminary study to determine whether radiolabelled liposomes would identify joints affected by rheumatoid disease.

Patients, methods, and results

We studied two control subjects and eight patients with rheumatoid arthritis (six with active and two with inactive disease). Patients with active disease had