ratings rose as the drug was withdrawn but subsequently subsided, suggesting that the symptoms represented a true withdrawal syndrome and not the revival of the original anxiety. Furthermore, the perceptual changes, such as intolerance to light and sound, unsteadiness, and a feeling of motion, are untypical of anxiety. Some patients have complained of strange smells and a metallic taste.

Both our patients were originally taking other benzodiazepines before transferring to clobazam. They developed a typical syndrome on withdrawal of clobazam. We have not yet encountered a patient who has developed dependence on clobazam alone but would expect such cases to become apparent in due course.

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Self-poisoning with oral salbutamol

The oral bronchodilator drugs salbutamol (a selective $beta_2$-adrenoceptor agonist) and theophylline (a methylxanthine) are commonly used in the management of patients with airflow obstruction. Theophylline has a low therapeutic index and may be dangerous in overdosage.[1] Apart from one case report,[2] however, little information is available concerning poisoning with oral salbutamol. We describe 40 patients who ingested excessive quantities of salbutamol, and report their symptoms and outcome.

Patients and methods

We reviewed 40 patients who had been reported to the poisons unit during 1979 and 1980, allegedly having ingested excessive quantities of salbutamol (either tablets or elixir). The table shows details of the patients, the amounts of salbutamol ingested, and clinical findings.

All patients were admitted to hospital, where 20 received either gastric lavage or syrup of ipecacuanha to promote emesis. Cardiac rate and rhythm were monitored. In two patients serum potassium concentrations were 2·2 and 2·6 mmol(mEq)/l. No patient developed ventricular arrhythmias, and all remained haemodynamically stable. Beta-adrenoceptor-blocking drugs were administered to 10 patients. Propranolol was the drug most commonly used. The dose range was 5-10 mg by mouth in the four patients under 10 years of age, and 10-80 mg by mouth in the six patients over 10 years of age. Only one patient was given an intravenous beta-blocker (10 mg practolol). All patients made an uneventful recovery.

Clinical details of patients and amount of salbutamol ingested

	Patients under 10 years of age	Patients over 10 years of age
No and sex	20 (13M, 7F)	20 (4M, 16F)
Age range (years)	2–8	12–76
Amount of salbutamol ingested (mg):		
Range	5–100	14–240
Mean	37	74
Symptoms (No of patients):		
Muscle tremor	4	10
Flushing	5	3
Agitation	3	3
Palpitations	1	5
Sinus tachycardia:		
No of patients	12	14
Range of rates (beats/min)	140–220	110–160

Comment

Our findings support those of Morrison and Farebrother,[2] who described a 44-year-old woman who made an uneventful recovery after ingesting 200 mg salbutamol. Self-poisoning with oral theophylline may, however, be lethal. Helliwell and Berry[1] reviewed eight patients severely poisoned with oral theophylline; two patients died. Furthermore, as few as seven 225 mg tablets of sustained-release aminophylline have produced a highly toxic serum theophylline concentration of 146 mg/l (therapeutic range 8-20 mg/l).[3]

The difference in toxicity between salbutamol and theophylline may in part be explained by their differing actions on the heart and central nervous system. The tachycardia caused by salbutamol is probably reflex (secondary to peripheral vasodilatation,[4] a specific $beta_2$ effect), whereas that caused by theophylline is partly the result of direct cardiac stimulation.[5] This might explain why ventricular arrhythmias, common in theophylline toxicity,[1] were not observed in our patients (despite hypokalaemia in two). We also did not observe convulsions in our patients, although six were agitated. Fits are common in severe theophylline toxicity[1] and may be explained by a direct stimulatory action of theophylline on the cerebral cortex.

Charcoal haemoperfusion, the most effective treatment for severe theophylline intoxication,[3] is available in only a few specialist centres. Salbutamol overdosage requires no specific treatment. Although beta-adrenoceptor-blocking drugs were given to 10 of our patients, they were probably unnecessary. Such drugs should always be used with extreme caution in any patient with airflow obstruction who has ingested excessive quantities of salbutamol.

Our study emphasises the safety of salbutamol in overdosage. The difference in toxicity between oral salbutamol and theophylline has important implications in the prescribing of oral bronchodilator drugs.

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THE ELM TREE is so well known, growing generally in all counties of this land, that it is needless to describe it.

It is a cold and saturnine plant. The leaves thereof bruised and applied, heal green wounds, being bound thereon with its own bark. The leaves or the bark used with vinegar, cures scurf and leprosy very effectually; The decoction of the leaves, bark, or root, being bathed, heals broken bones. The water that is found in the bladders on the leaves, while it is fresh, is very effectual to cleanse the skin, and make it fair; and if cloaths be often wet therein, and applied to the ruptures of children, it heals them, if they be well bound up with a truss. The said water put into a glass, and set into the ground, or else in dung for twenty-five days, the mouth thereof being close stopped, and the bottom set upon a layer of ordinary salt, that the foeces may settle and water become clear, is a singular and sovereign balm for green wounds, being used with soft tents: The decoction of the bark of the root, fomented, mollifies hard tumours, and the shrinking of the sinews. The roots of the Elm, boiled for a long time in water, and the fat arising on the top thereof, being clean skimmed off, and the place anointed therewith that is grown bald, and the hair fallen away, will quickly restore them again. The said bark ground with brine or pickle, until it come to the form of a poultice, and laid on the place pained with the gout, gives great ease. The decoction of the bark in water, is excellent to bathe such places as have been burnt with fire. (Nicholas Culpeper (1616-54) *The Complete Herbal*, 1850.)