TETANY, TETANUS OR DRUG REACTION?
A case report

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SUMMARY

An 8-year-old child was given perphenazine to prevent vomiting after surgery and developed an acute dystonic reaction. There were features of both tetany and tetanus without any of the classical features of extrapyramidal disturbance. The diagnostic difficulties are discussed. The reaction was treated successfully with i.v. diazepam. The prescribing of anti-emetics after surgery is examined critically with special reference to children.

The tranquilizer perphenazine (Fentazin) is a potent anti-emetic but, in common with other phenothiazines with a piperazine side-chain, is reputed to cause adverse extrapyramidal reactions (Goodman and Gilman, 1970). These reactions may present in an alarming and bizarre manner which may cause diagnostic difficulties. The manufacturers of the drug specifically advise against its use in children.

CASE REPORT

An 8-year-old boy was admitted to hospital on September 11, 1975 with an 8-h history of abdominal pain and vomiting. Acute appendicitis was diagnosed and confirmed at operation which was uneventful. No i.v. fluids were given during or immediately following the procedure. The patient recovered from the anaesthetic uneventfully. Pethidine 25 mg and perphenazine 5 mg i.m. were prescribed for analgesia after surgery, to be repeated when required. The first dose was given 3 h after operation at 22.55 h, and further doses were given at 02.30 h and 19.00 h on the first day after operation.

The progress after surgery was satisfactory for the first 36 h and oral fluids were allowed. However, at 08.15 h on September 13 the patient was restless and, soon after, began to make grunting noises and appeared very distressed, although not admitting to pain. Thirty minutes later he began to have muscular spasms and twitches affecting mainly the limbs. The temperature was 36.8 °C, the heart rate 138/min, and the arterial pressure 150/90 mm Hg. No explanation for these bizarre signs could be found and, at 10.00 h, a further dose of pethidine 25 mg and perphenazine 5 mg was given in an attempt to sedate the patient.

The intensity of the spasms increased and the patient was seen by the authors for the first time at 10.20 h. The most striking feature was periodic severe carpopedal spasm, each lasting about 1 min, with intervals of 3 min. Respiration was laboured with marked expiratory grunting associated with considerable muscular rigidity of the chest and anterior abdominal wall. There were no abnormal eye movements, torticollis or abnormal movements of the tongue or jaw and no apparent increase in salivation. Chvostek's sign and Trousseau's signs were negative but despite this we diagnosed tetany which, in the absence of obvious overbreathing, we assumed to be a result of hypocalcaemia of metabolic origin. A sample of venous blood was taken for biochemical analysis and 10% calcium gluconate 800 mg (20 mg/kg) was injected i.v. This failed to produce improvement. The serum calcium concentration proved to be normal (2.6 m mol/litre) as were the urea and electrolyte concentrations.

Risus sardonicus was noted and, in association with the spasms of the limb musculature and transient opisthotonus, suggested a diagnosis of tetanus. However, there was no history of a contaminated wound and we were mindful that in tetanus the hands are clenched with the fingers flexed, whereas in this case the fingers were fully extended (main d'accoucheur).

Examination of the drug history revealed what we considered to be a relative overdose of perphenazine, although there were no classical extrapyramidal signs. Having deduced the reaction to be “tetanoid” in type, we commenced treatment i.v. with diazepam 2.5 mg and perphenazine was discontinued. This greatly reduced the ferocity of the spasms. Repeated doses of diazepam 1-2 mg were given 2-4 hourly, as

required, to control the spasms and i.v. fluid therapy was commenced.

By the next morning there were no further spasms and i.v. diazepam was replaced by oral diazepam 1 mg every 8 h. This was discontinued on the 4th day after operation and the patient was discharged home fit and well on September 17.

DISCUSSION

It is known that extrapyramidal disturbances occur in patients receiving long-term phenothiazine therapy and 20–40% of such patients may be affected (Scime and Tallant, 1959). These reactions show the classical features of Parkinson's disease.

Acute reactions to phenothiazine drugs are less common and more difficult to recognize. They may occur following frank overdose or, more commonly, as an idiosyncrasy. It is now accepted that these reactions may mimic many of the clinical manifestations of tetanus ("pseudotetanus") (Matthes and Andrée, 1968). Such cases may be referred mistakenly to tetanus treatment centres (Cochlin, 1974). However, there are additional features which signify an extrapyramidal origin (Scime and Tallant, 1959) and these are most marked in the musculature of the head and neck, with relative sparing of the limbs. Typical features are abnormal eye movements (especially oculogyric crises) and bizarre movements of the tongue and jaw (Okojie, 1972; Bellman, 1974).

The most striking features of our patient were localized to the limbs with less disturbance of the head and neck and no features which could be identified as extrapyramidal. However, Ford (1966), describing the manifestations of extrapyramidal disturbance in children following epidemic encephalitis, states that there may be purely tonic seizures or tetanoid attacks in which consciousness may remain clear and in which the hands and feet assume the postures seen in the carpopedal spasms of tetany.

Most authors have recommended the use of an anti-Parkinsonian drug such as diphenhydramine (Gupta and Lovejoy, 1967) or benztropine (Bellman, 1974) for the treatment of extrapyramidal signs. At the time of the incident, believing the reaction to be "tetanoid" in nature, we chose to control it with intermittent i.v. doses of diazepam since this drug is known to be effective in mild cases of tetanus (Dundee, 1968). Diazepam was of considerable value in the management of this patient. We agree with Korczyn and Goldberg (1972) that diazepam is readily available in most hospital wards and that the majority of doctors are familiar with its use intravenously; however, we believe that benztropine would have provided us with a more specific form of treatment.

Riding (1975), reviewing the subject of vomiting following surgery, questioned whether the routine prophylactic use of anti-emetic drugs is justified: "It would not appear that there is a very impressive advance toward the development of an anti-emetic drug which is highly effective . . . and is at the same time free from unwanted side effects".

Purkis and Ishii (1963) showed that perphenazine 5 mg was effective in preventing postoperative vomiting for more than 24 h, implying that repeated administration is unnecessary. However, we find it is common practice, particularly by surgeons and gynaecologists, to prescribe after operation a combination of a narcotic analgesic and perphenazine 5 mg, to be repeated 6-hourly or whenever the patient is in pain. This is intended to prevent the nausea and vomiting associated with narcotic analgesics. We believe that this habit is to be condemned, not only because of the considerations mentioned above, but because of the differing durations of action of the two drugs.

The analgesic effects of a narcotic may be of short duration (3–4 h in the case of pethidine) whereas the anti-emetic effects of the perphenazine will be longer. Thus, when the patient requires further analgesia, perphenazine may be given unnecessarily. It is well known that the half-life of phenothiazines in the body may be prolonged, hence cumulative effects greatly increase the likelihood of untoward reactions, which are further exacerbated when the dose of narcotic is a relative underdose and that of perphenazine a relative overdose, as occurred in the present case.

The problem may be more serious in children, in whom symptoms of phenothiazine toxicity are more marked, especially in association with toxic, febrile and dehydrated states (Duffy, 1971). Gupta and Lovejoy (1967) reviewed 20 cases of acute phenothiazine toxicity in children and concluded that, since most cases of acute nausea and vomiting in childhood are of short duration, drug treatment is unnecessary.

REFERENCES


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**RESUME**

On a donné à un enfant de 8 ans de la perphenazine pour l'empêcher de vomir après une intervention chirurgicale et il s'est alors produit une réaction dystonique aiguë. On a constaté des symptômes caractéristiques de la tétanie et du tétanos sans qu'il y ait toutefois de symptômes caractéristiques classiques de troubles extrapyramidaux. On expose dans cet article les difficultés rencontrées pour établir le diagnostic. La réaction a été traitée avec succès à l'aide de diazepam administré par voie intraveineuse. La prescription d'anti-émétiques après les interventions chirurgicales est étudiée d'une manière critique, surtout dans le cas des enfants.

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**ZUSAMMENFASSUNG**


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**SUMARIO**

Se administró perfenacina a un niño de 8 años para prevenir vómitos tras una intervención quirúrgica, desarrollando una aguda reacción distónica. Había características tanto de tetania como de tétanos sin existir ninguno de los rasgos clásicos de alteraciones extrapiramidales. Se comentan las dificultades diagnósticas. La reacción fue tratada con éxito mediante diazepam i.v. Se examina criticamente la receta de antieméticos en el postoperatorio, con especial atención a su uso en pediatría.