EXTRAPYRAMIDAL SYNDROMES AFTER PREMEDICATION WITH DROPERIDOL IN CHILDREN

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SUMMARY

Four cases of extrapyramidal hypertonic syndrome were observed in 82 children who had been premedicated with small i.m. doses of droperidol. The frequency, time of onset, clinical description and treatment of this complication are discussed.

The use of droperidol for premedication in children provides good sedation, facilitates venepuncture and produces a potent anti-emetic effect. The extrapyramidal syndrome, although rare, is one of the disadvantages of this drug. This paper reports four cases of this syndrome, observed by the authors during 1 year.

CASE REPORTS

Patient No. 1

A 6-month-old boy was premedicated with atropine and droperidol 0.1 mg kg\(^{-1}\) for removal of stitches following repair of cleft lip. Forty-five minutes later, an akinetic hypertonic syndrome with lead pipe rigidity began to occur. This developed in successive periods of about 10 min over the next 6 h. Anaesthesia was not induced. After 6 h, an i.m. injection of chlorpromazine 0.4 mg kg\(^{-1}\) successfully treated the hypertonic syndrome. A previous anaesthetic had been given using halothane and pentazocine following premedication with atropine and alimemazine (Théraclé) without incident. The child was anaesthetized uneventfully 6 months later with halothane after receiving a premedication of atropine and alimemazine.

Patient No. 2

A 7-yr-old girl underwent surgery for an abscess of the cheek. After premedication with atropine and droperidol 0.1 mg kg\(^{-1}\), anaesthesia progressed normally with enflurane. Recovery was rapid. Eight hours later a hypertonic syndrome was noted, presenting as paroxysms characterized by opisthotonos, trismus, lateral flexion of the neck and oculogyric spasms. Consciousness did not seem to be impaired. After 2 h an i.m. injection of alimemazine 0.3 mg kg\(^{-1}\) was given to treat the crisis. During the past 3 months, the child underwent several anaesthetics without incident. The last operation was performed under neuroleptanaesthesia after premedication with atropine and droperidol 0.1 mg kg\(^{-1}\).

Another anaesthetic was given 2 months later using thiopentone and enflurane, after premedication with atropine and diazepam 0.2 mg kg\(^{-1}\).

Patient No. 3

A 13-yr-old boy was given an i.m. premedication of atropine and droperidol 0.17 mg kg\(^{-1}\) before a cisternal puncture. Nine hours after the injection, a hypertonic syndrome identical to that in patient No. 2 occurred. It was characterized by opisthotonos, lateral flexion of the neck, trismus and oculogyric spasms. As the syndrome was still evident after 1 h, an i.m. injection of diazepam 0.17 mg kg\(^{-1}\) successfully treated the crisis. The child, who had been injured in a traffic accident 1 month before, had already undergone surgery twice under neuroleptanaesthesia after premedication with atropine and alimemazine 1 mg kg\(^{-1}\). No particular signs were noticed apart from those associated with his injury (complex cranio-facial trauma). The day before, he had been premedicated with droperidol 0.17 mg kg\(^{-1}\) for a lumbar puncture and no hypertonic syndrome had been observed.

Patient No. 4

A 10-yr-old boy was anaesthetized with thiopentone and halothane for treatment of a dental cyst. He was premedicated with atropine and droperidol 0.16 mg kg\(^{-1}\). The operation took place normally and recovery was satisfactory. Fourteen hours after premedication, a hypertonic syndrome became evident with opisthotonos, lateral flexion of the neck, trismus and oculogyric spasms. The child responded to suggestion. After 1 h an i.m. injection of diazepam 0.17 mg kg\(^{-1}\) successfully treated the crisis. During the operation, the child was anaesthetized uneventfully under thiopentone and enflurane, after premedication with atropine and diazepam 0.2 mg kg\(^{-1}\).
0.16 mg kg\(^{-1}\) treated the crisis. The patient's history did not indicate any previous illness.

**DISCUSSION**

During the year 1976, 82 children in our hospital were premedicated with droperidol before various operations on the head and neck and, in four, hypertonic syndrome was reported. The frequency of this complication seems to vary in paediatric anaesthesia. Davies and Doughty (1971) recorded no cases in a series of 240 premedications with droperidol 0.22 mg kg\(^{-1}\). Grokhovsky and Gorchinskaya (1972) reported 11 cases out of 127 neuroleptanaesthetic procedures, and Gounot, Metafiot and Lambert (1976) two cases out of 104 similar anaesthetics.

Among neurolept-induced dyskinesias, Laplane and Dordain (1970) distinguished four groups:

1. An akinetic syndrome with mask-like facies, decreased movement and lethargy.
2. A hypertonic syndrome with plastic “lead pipe rigidity”.
3. Akathisia syndrome with inability to sit still and restlessness. Morrisson, Clarke and Dundee (1970) noted this fact in 30–45% of their patients.
4. Dyskinetic syndrome (patients Nos 2, 3, 4), which is the most frequent. It affects mainly the facial region with trismus, movements of the tongue and lips, but never involves upper facial nerve distribution. It combines oculogyric spasms (American College of Neuropsychopharmacology, 1973) wry neck, opisthotonos and sometimes leads to “rotary” crisis as in the report by Debray and Galland (1970). Occasionally it occurs as a vegetative episode, with tachypnoea, sweating and vasodilatation. The syndrome develops through a crisis of 2–10 min duration, occurring more or less regularly. Suggestion may occasionally stop the crisis, but only temporarily.

Transition forms or combinations of these groups may occur, as in patient No. 1 who developed an akineto–hypertonic syndrome.

The patient recovers spontaneously without sequelae. However, the duration of the syndrome is not predictable. In cases of acute episode, the crisis does not last more than a few hours, but prolonged syndromes have been reported lasting for 6 years (Kurland, 1967).

According to Kurland (1967) there is a predisposing factor, since such syndromes are more frequent in patients suffering from Parkinson's diseases. Sex has no influence. Children are more susceptible to the effects of butyrophenones. In acute intoxication with droperidol, hypertonicity does seem to be related to dose. It occurs even with low dosage as used in this series of less than 0.2 mg kg\(^{-1}\).

In addition to butyrophenones, some other neuroleptics, anti-emetics such as thiethylperazine, or metoclopramide (Brunet and Thiroloix, 1972) may induce such crises. The lapse of time between a single injection and the crisis is very variable. It may be only a few minutes after i.v. injection according to Janis (1972) and Clifton (1975), or more than 12 h after i.m. injection as in patient No. 4 presented here. In this child no evidence was found for reduction in the rate of metabolism of droperidol.

Ayd (1961) reports that this reaction has been misdiagnosed as seizure, tetanus, meningitis, encephalitis and poliomyelitis, resulting in emergency admission to hospital, spinal punctures, antibiotic therapy and even tracheotomy.

The treatment of this condition varied according to the authors. Grokhovsky and Gorchinskaya (1972) used atropine, while Laplane and Dordain (1970) used trihexyphenidyl. Debray and Galland (1970) administered a “sedative” neuroleptic such as alimemazine, promethazine or chlorpromazine. We used diazepam in patients Nos 3 and 4, relying upon the effects of suggestion and upon the sedative effect of diazepam. We were satisfied with this treatment.

On the whole, the occurrence of such reactions appears to be quite unpredictable even with small doses of droperidol. We have therefore decided to reduce the use of droperidol for premedication as much as possible in our anaesthetic practice.

**REFERENCES**


**SYNDROMES EXTRAPYRAMIDAUX APRES PREMEDICATION AU DROPERIDOL SUR DES ENFANTS**

**RESUME**

Quatre cas de syndromes extrapyramidaux hypertoniques ont été observés sur 82 enfants auxquels on avait administré de petites doses intramusculaires de droperidol à titre de prémédication. On expose dans cet article la fréquence, le départ de réaction, la description clinique et le traitement de cette complication.

**EXTRAPYRAMIDAL-SYNDROME BEI KINDERN NACH VORBEHANDLUNG MIT DROPERIDOL**

**ZUSAMMENFASSUNG**

Vier Fälle hypertonischer Extrapyramidal-Syndrome wurden bei 82 Kindern beobachtet, die mit kleinen Dosen intramuskulär verabreichten Droperidols vorbehandelt worden waren. Häufigkeit, Eintrittszeit, klinische Beschreibung und Behandlung dieser Komplikation werden diskutiert.

**SINDROMES EXTRAPIRAMIDALES DESPUES DE PREMEDICATION CON DROPERIDOL EN NINOS**

**SUMARIO**

Se notó cuatro casos de síndromes extrapiramidales en 82 niños que habían recibido prémédicación con pequeñas dosis i.m. de droperidol. Se discute de la frecuencia, tiempo de manifestación, descripción clínica y tratamiento de dicha complicación.