KETAMINE IN THE MANAGEMENT OF A CASE OF LYMPHOSARCOMA CUTIS

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SUMMARY

Over a period of 11 months a child suffering from lymphosarcoma cutis received 59 ketamine anaesthetics, as an outpatient, for radiotherapy, intrathecal therapy, a brain scan, bone marrow biopsies and electroencephalography.

CASE REPORT

A white female child weighing 3.4 kg at birth after a forceps delivery was found to have bilateral congenital dislocation of the hip, which was successfully treated conservatively without anaesthesia, but was otherwise normal on clinical examination. When 7 months old, she presented with a 3-month history of symptomless tumours of the scalp, face, upper back and groin, and biopsy revealed lymphosarcoma. The 5-year survival rate in children with this condition is 9.35%, and 13.2% for those without leukaemia. The mortality rate is 50% in the first 6 months of the disease. Death may result from leukaemia (30%) or metastases to central neurological tissues (Pochedly, 1965; Jones and Klingberg, 1963).

As there was no evidence of leukaemia, this child was treated initially with prednisolone 15 mg orally thrice daily, cyclophosphamide 30 mg intravenously daily, and vincristine 0.75 mg intravenously three times weekly. Within 3 days of commencing treatment the lesions had almost disappeared. However, 8 months later central neurological involvement was revealed in the cytology of a cerebrospinal fluid specimen, and a course of intrathecal methotrexate was proposed. Despite sedation with chloral hydrate, trimethazine tartrate and nepenthe, either alone or in combination, the child became increasingly difficult to manage and help was sought from the anaesthetic department. Ketamine was thought suitable to provide multiple anaesthetics for an infant, who, as an outpatient, was likely to require radiotherapy with a supervised but unattended airway (Harrison and Bennet, 1963; Browne, Boulton and Crichton, 1969), and repeated lumbar punctures for the intrathecal therapy (Cronin et al, 1972; Morgan, Loh and Moore, 1971; Hunter, 1972). An initial trial of intramuscular ketamine was given for a bone marrow biopsy and a lumbar puncture at a dosage of 11 mg/kg. Convulsions occurring 48 hours later were ascribed to the disease and not to the ketamine, which was regarded as highly suitable for the proposed programme of bone marrow biopsies, intrathecal therapies and radiotherapy.

The routine adopted was for the patient's mother to give atropine 0.6 mg orally in 5 ml of water or orange juice at home 2 hours before attending the hospital. The child was starved beforehand. Ketamine, as the 10% solution at an average dose of 11 mg/kg was given i.m. to alternate thighs. Anaesthesia was induced in 3–5 min permitting lumbar puncture and/or bone marrow biopsy. Alternatively, after anaesthesia was induced, the child was transferred to the radiotherapy department on a trolley over a distance of about 400 metres, mostly outdoors, accompanied by the anaesthetist, resuscitation equipment, a nurse, her mother and one or two porters.

Radiotherapy lasted up to 5 min with the patient in both lateral positions, alone but able to be observed through the leaded window. She returned on the trolley to the ward for recovery, usually being away for about 15 min. Recovery varied from 20 to 70 min (King and Stephen, 1967).

On only one occasion did the patient become cyanosed after induction. This incident occurred 4 days after the first dose of a cytotoxic drug, asparaginase, had been administered. The intramuscular induction was rapid: 1 min instead of the usual 3–5 min, followed by a loss of muscle tone causing the tongue to fall back and obstruct the airway. Elevating the chin prevented the cyanosis and subsequent recovery was uneventful. There were no such incidents associated with any later doses of asparaginase. Otherwise no airway problems occurred, even when the patient was placed in a supine position, although on two occasions when the atropine had been omitted accidentally the increased salivation warranted closer observation but caused no problem.

The entire schedule was carried out with only one injection of ketamine on each occasion, except once when electroencephalography was undertaken following radiotherapy and needed an incremental dose of 20 mg i.v. for full control. On another occasion Althesin was used to facilitate a lumbar puncture, but this resulted in undesirable movements. Otherwise sedation was satisfactory throughout.

The electroencephalogram taken whilst the patient was anaesthetized with ketamine is of interest since characteristic changes have been described (Virtue et al., 1967; Domino, Chodoff and Corsen, 1965), and these may have been expected to interfere with the diagnosis. Low voltage theta activity over the frontal regions and an absence of alpha frequencies, which are a characteristic of ketamine, were found. This did not obscure a disturbance in the temporal and central regions which was a little more marked on the left, but reported as "not very abnormal".

A full haematological examination was made twice weekly, together with urine analysis, bone marrow appraisals, cerebrospinal fluid examinations and, of course, full clinical assessment throughout the period of the ketamine administration. No abnormalities could be attributed to ketamine. Over 11 months of treatment the patient's weight increased from 11.8 to 15.4 kg. This
was partly an effect of prednisolone. She ate and slept well with no evidence of any psychological disturbances or nightmares.

Up to 2 months before her death her motor and manipulative development appeared to be about 6 months behind normal, her speech and play above normal, and her habits about normal for her age, despite brain secondaries revealed by a brain scan and a later lesion in front of the optic chiasma which caused her to stop using her left eye. Until her speech and walking deteriorated, this patient had been able to leave hospital, walking, within 2 hours of having the ketamine injection. She had shown no aversion to attending hospital, nor any dislike of the regime, apart from a mild dislike of the injections. Unfortunately, the 10% solution of ketamine became unobtainable in the second half of the course of treatment, resulting in painful thighs from the larger volume of the 5% solution.

Ten days after her last ketamine administration the patient became drowsy and pyrexial and died from brain secondaries and cerebral oedema. The last dose was reduced to 80 mg in view of the patient’s deteriorating clinical condition. There were no adverse effects. In all, 59 ketamine injections had been administered.

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REFERENCES


