Outlook following "somnolence syndrome" after prophylactic cranial irradiation

The "somnolence syndrome" consists of drowsiness, lethargy, anorexia, and irritability occurring in about 60% of children six weeks after prophylactic irradiation of the central nervous system in acute leukaemia or non-Hodgkin's lymphoma.¹ It is associated with electroencephalographic (EEG) abnormalities.^{1,2} We have studied 27 children prospectively to evaluate EEG changes occurring in children after irradiation of the central nervous system. We have also attempted to correlate the occurrence of the syndrome with the fractionation of radiotherapy and with the subsequent survival and well-being of the children.

Patients, methods, and results

The study group consisted of 17 children with acute lymphoblastic leukaemia and 10 children with non-Hodgkin's lymphoma; there were 18 boys and nine girls and their median age was 5.2 years. Twenty-four children received 2400 rads of cranial irradiation with five doses of 10 mg/m² (maximum 12 mg) methotrexate intrathecally. Three children also received spinal irradiation with 1000 rads and no intrathecal methotrexate.

Seventeen of the 27 children (63%) had clinically significant somnolence after cranial irradiation. The syndrome occurred irrespective of type of disease, sex, or age of the patient. EEG abnormalities occurred in nine out of ten children who had EEG examination during somnolence (see figure) and

Electroencephalographic results of nine patients who had an EEG taken during the somnolence syndrome.

subsequently returned to normal in eight of these children. The abnormalities consisted of pathological symmetrical slowing of the dominant rhythm or increase to excess of the diffuse theta and slow components, given the levels of awareness of the children. The one child whose EEG failed to return to normal died with systemic relapse of lymphoma 11 months after diagnosis.

Children receiving their radiotherapy in fewer than 16 fractions and less than 22 days had a higher incidence of somnolence (12 out of 16 children) than those receiving more than 19 fractions in more than 24 days (four out of 10 children somnolent). Although this disparity could be due to chance variation, the difference may be due to the greater biological effect of radiation when given in fewer fractions.

There was no significant difference between the survival of children who developed somnolence (median survival 36 months) and that of non-somnolent children (median survival 27 months), nor was there an increase in central nervous system relapse in somnolent children. Somnolence was unrelated to taking adriamycin or colaspase as part of the systemic chemotherapy.

Comment

The benign nature of the somnolence syndrome is confirmed in this study. Knowledge of its existence is important for reassuring

children and their parents and for preventing unnecessary investigation.

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¹ Freeman, J E, Johnston, P G B, and Voke, J M, *British Medical Journal*, 1973, **4**, 523.

² Garwicz, S, et al, *Acta Paediatrica Scandinavica*, 1975, **64**, 339.

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Blood pressure and kilopascals

The use of kilopascals for measuring blood pressure was recommended in 1960 by the General Conference on Weights and Measures in its authorisation of the SI system,¹ but it has not so far been accepted by the medical profession. I have been using kilopascals since 1976 and have found the changeover quite simple.

Conversion from mm Hg to kPa

I recalibrated the near side of the 2 mm scale on my wall mercury sphygmomanometer in kilopascals (integers only) and started to use this exclusively. For the first three months the opposite 2 mm scale was left to make conversion easier. Then I recalibrated this as well and converted to mm Hg only when essential; all blood pressure readings for FP7 and 8 forms, insurance reports, maternity co-operation cards, and hospital correspondence are now given in kilopascals, the mm Hg equivalents being added in parentheses where necessary.

A pressure of 1 kilopascal (kPa)—the force exerted by 1 newton on an area of 1 m²—is equal to 7.5 mm Hg (see table). Thus 1 kPa is represented by 3½ intervals on the usual 2 mm sphygmomanometer scale.

kPa-mm Hg conversion for blood pressure readings

kPa	mm Hg	kPa	mm Hg
8	60	24	180
10	75	28	210
12	90	32	240
16	120	36	270
20	150	40	300

I record the pressure to the nearest integer and do not regard the larger units as a disadvantage. With so many variables influencing recordings, the precise detail of millimetre measurement is both unnecessary and unrealistic. (Observer variation of about 2 kPa in the pulse pressure recorded may be contributed just by the phase of respiratory excursion—inspiration may raise the systolic reading by about 1 kPa and expiration may lower the diastolic reading by the same amount.) Physicians do not in fact record the pressure precisely in millimetres—I always recorded readings to the nearest 5 mm, and nurses tend to record them to the nearest 10 mm. Even for critical readings (for example, for insurance examinations and in serious obstetric conditions) I measure to the nearest kPa but take three readings, with a pause—not, however, 5 minutes as commonly recommended—and a deep breath between each one. Readings of 0.5 kPa could if desired be used for precise measurements needed by scientific work.

Hart's criteria² for the management of asymptomatic hypertension must now be translated into kilopascals. Hart regards 100, 105, 110, and 115 mm Hg as the critical diastolic levels in different circumstances—in kPa 13.3, 14, 14.7, and 15.3, which is clearly unsatisfactory. Since using kilopascals I have come to regard the danger level as between 12 and 16 kPa