

bowel mucosal damage resulting in diarrhoea. It is important that diarrhoea is not accepted as a normal symptom of cancer chemotherapy and that stool specimens are sent for full bacteriological and viral investigations including examination for the presence of *C difficile* and its toxin. Relapse after the discontinuation of treatment with vancomycin, metronidazole, or bacitracin has been reported with incidences ranging from 5% to 59%.⁵ In the present series, the symptomatic relapse rate was 38%.

There now seems little doubt that *C difficile* infection is a communicable disease, which may cause outbreaks of infection in hospital.^{2,3} Patients with diarrhoea known or suspected to be due to *C difficile* should be isolated and 'barrier-nursed' in the same way as patients with other recognised gastrointestinal pathogens. The low incidence of asymptomatic carriage detection in this study suggests that screening is probably not worthwhile as a routine preventive measure except during an outbreak. Antibiotic policies should be reviewed if an outbreak occurs.

It is possible that the outbreak could have been aborted if control measures had been commenced sooner. Recognition that an outbreak is occurring is therefore vital, particularly in units which already have a low 'background' incidence of infection.

Therefore we suggest that paediatric oncology units should monitor the number of cases of *C difficile* infection and if there is any evidence of an increasing incidence control measures should be started.

With early treatment severe life threatening illness may be prevented. The presence of either the toxin or the organism may be related to symptoms, and the absence of the toxin should not dissuade the physician from considering *C difficile* as a pathogen and commencing specific treatment.

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Variation in lower leg growth with alternate day steroid treatment

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SUMMARY Daily growth of the lower leg in a child receiving alternate day oral steroids for Crohn's disease was measured by knemometry. Growth occurred on days free of treatment. This may represent a direct observation of the growth sparing effect of alternate day steroid medication.

The knemometer is designed to measure changes in tibial length with great accuracy.¹ The technique has recently been rigorously assessed and its power in detecting changes in growth over short (less than eight weeks) periods confirmed.² The definition of

measurement is 0.1 mm and the coefficient of variation of six readings by one observer is 0.09% giving a precision (coefficient of variation \times mean value of tibial length) of 0.2 mm. Intradaily variation in tibial length has been described in normal children,³ and day to day fluctuations in growth shown in children receiving growth hormone using the same technique.⁴

The recent suggestion that this technique may be used as a sensitive marker of growth suppression prompted us to measure the daily lower leg length of a child receiving alternate day oral steroids for the treatment of Crohn's disease.⁵

Case report

An 11.6 year old boy who had suffered from Crohn's disease for five years was an inpatient for establishment of an enteral feeding regime and exclusion diet. He was otherwise in good symptomatic health with no clinical signs of relapse. He had received prednisolone intermittently since the onset of his illness and his height was on the third centile for chronological age, with a 2.5 year delay of skeletal maturation. His height velocity in the year before admission was 5.2 cm/year. After a three week period during which his dietary intake was stabilised his weight (on an Avery Beam Balance) and lower leg length were recorded daily one hour after waking and similar physical activity on the ward. Four measurements of lower leg length were taken at each attendance as previously described with no reference to the previous days readings.² The mean of the four determinations was used for comparisons. Standing height was measured weekly using a Harpenden stadiometer. For the final nine measurement days the soft tissue thickness of the heel pad and superior aspect of knee were measured to the nearest 0.1 mm using a linear ultrasound beam (Dermal Depth Detector, Cotech Ltd) to attempt to discriminate between true bone length change and soft tissue compression or expansion.

Throughout the measurement period the patient

received 1g of sulphasalazine two times a day and 7.5 mg of soluble prednisolone on alternate days, after the measurement session. For the last week of study the steroid dosage was put 'out of phase' by one day to determine if any alteration in the pattern of growth could be observed.

Results

The changes in mean lower leg length, standing height, weight, and soft tissue thickness are shown in fig 1. It can be seen that there was consistent growth on days free of steroid, followed by a smaller shortening on treatment days. This pattern was maintained on and after the days when steroids were administered consecutively in the final week. This pattern can be quantified by comparing the changes in length observed from 'no treatment to treatment' days with 'treatment to no treatment' days and is significant ($t=3.62$; 13 df; $p<0.005$) (fig 2). The changes in weight tended to parallel the changes in lower leg length (on 11 out of 15 occasions) but the association was not significant ($t=1.53$; 13 df; $p<0.2$). Although the total soft tissue thickness varied from day to day, the changes were not significant and tended to oppose the length changes, supporting the observation that true lengthening of the lower leg occurred on steroid free days.

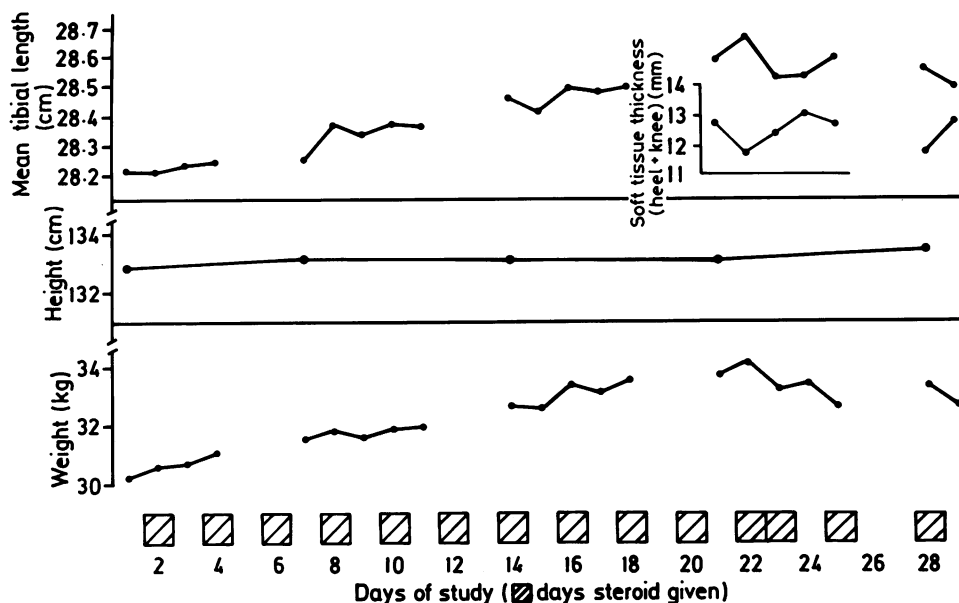


Fig 1 Changes in mean tibial length, standing height, weight, and soft tissue thickness.

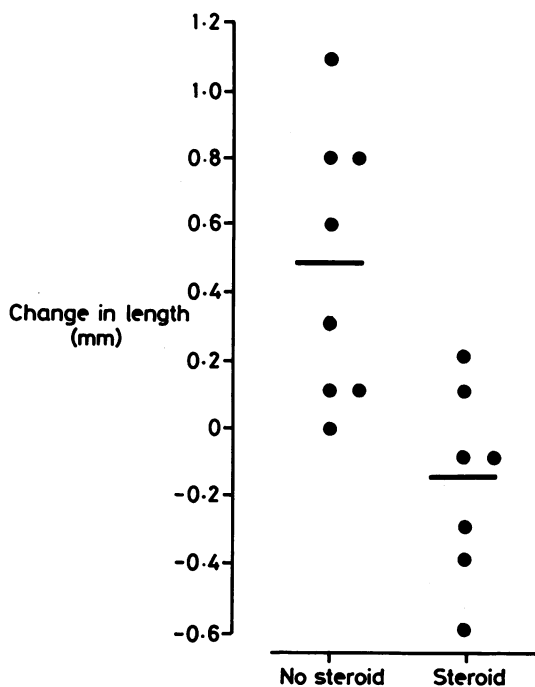


Fig 2 Variation in lower leg growth with alternate day steroid treatment.

Discussion

The knemometer provides a valuable means of observing biological phenomena related to short term, and ultra short term growth changes of the lower leg. The magnitude of the observed fluctuations in lower leg length in this case are well within the observed capabilities of the apparatus.² The

mechanism of the growth inhibition due to steroid administration is uncertain but is probably secondary to a peripheral blocking of the action of growth hormone.⁶ We postulate that the observed loss of length on days when steroids were administered is due to postural compression of non-growing cartilage and bone and is similar to the loss of length seen during illness or catabolic stress that we have previously described.² The observed differences in lower leg length probably do represent true changes in bone length rather than a soft tissue effect and could represent the first direct observation of the growth sparing effect of alternate day steroid regimes.

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Rubella immunisation for girls over 14 years

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SUMMARY Rubella vaccination was offered to a cohort of schoolgirls 14 years and over whose immune state was unknown. This increased the percentage vaccinated or known to be immune from 86% to 90%. It is recommended that rubella vaccination should be offered to girls until they leave school at 16 years of age.

The uptake of rubella vaccine by schoolgirls has increased since 1976 but in most areas is still below 90%.¹ In inner city areas absenteeism, failure to return consent forms, intercurrent illness, parental refusal, and desire to attend their own general practitioner, have a negative influence on vaccine uptake.² High mobility of the population and administrative difficulties within schools are additional factors.

The schoolgirl rubella vaccination programme is