

LETTERS TO THE EDITOR

Lag time for children with brain tumours

We read with considerable interest the paper by Edgeworth *et al* highlighting the failure of physicians to recognise often vague symptoms and/or signs as markers of serious disease, especially childhood brain tumours.¹

We previously studied the time interval (designated lag time) between the first symptom and/or signs and confirmed diagnosis in an unselected cohort of children with cancer including 28 with brain tumours, and found that for brain tumours the lag time of 13 weeks far exceeded the interval for all other tumours² (5 weeks for acute lymphoblastic leukaemia, bone tumours 8.4 weeks, neuroblastoma 2.8 weeks). There have been two other published series on lag time in brain tumours of childhood. Flores *et al* in Atlanta found a symptom interval of 26 weeks for 79 children.³ Only 38% of the brain tumour patients were diagnosed within one month of symptom onset compared with 84% for those with renal tumours, and 80% for childhood leukaemia.

Pollock *et al* in St Louis reported a lag time of 9.4 weeks for 380 children with a variety of brain tumours.⁴ The site of tumour and histological type does appear to affect lag time. Flores *et al* noted mean lag times of 43.4 and 10.8 weeks respectively for supratentorial and infratentorial tumours and also shorter lag times for those with more marked symptoms and signs. Two of these series have reported that younger patients present earlier.^{2,3} It has been argued that even with vague symptoms and signs, younger children are both more likely to be brought to medical attention because of parental anxiety or in any case are being seen more regularly for other routine health surveillance purposes (for example vaccinations). Self reporting in older children and adolescents is more of a 'hit and miss' process. Despite these findings our south east Scotland study failed to show any influence of length of lag time on clinical outcome.²

Edgeworth *et al* have essentially assessed one component of lag time, namely the time for doctors to recognise the significance of signs or symptoms once a child is brought to their attention.¹ Incorrect diagnosis will produce a tremendous amount of parent and patient anxiety let alone resentment. Ongoing medical education must be programmed to try to prevent such delays. However, for the majority of children the other components, namely the time from first symptom or sign to when medical advice is sought, and the time to get through the system and receive appropriate treatment, which appear to be essentially related to inherent tumour characteristics and health care provision respectively, together make the major contribution to length of lag time. We are conducting a prospective study attempting to clarify the contribution of each of these components to the overall lag time. From all the published work to date the greatest contribution does

appear to be related to inherent tumour characteristics which in turn determine the mode of presentation. Before parents blame themselves or doctors for delayed diagnosis we need to emphasise these other aspects of tumour presentation.

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- 1 Edgeworth J, Bullock P, Bailey A, Gallagher A, Crouchman M. *Arch Dis Child* 1996; 74: 148-51.
- 2 Saha V, Love S, Eden T, Micallef-Eynaud P, MacKinley G. Determinants of symptom interval in childhood cancer. *Arch Dis Child* 1993; 68: 771-4.
- 3 Flores, Williams DL, Bell BA, O'Brien M, Ragab A. Delay in the diagnosis of paediatric brain tumours. *Am J Dis Child* 1986; 140: 684-6.
- 4 Pollock BH, Krischer JP, Viesti TJ. Interval between symptom onset and diagnosis of paediatric solid tumours. *J Pediatr* 1991; 119: 725-32.

Is microalbuminuria progressive?

We read with interest the article by Shields *et al* on the question whether microalbuminuria is progressive or not.¹ Our data, presented at the 21th Annual Meeting of the ISPAD in Linköping,² are fully in line with the conclusions of this work. In 1984 we identified 14 children and adolescents as having persistent microalbuminuria (urinary albumin excretion (UAE) 30-300 mg/day) with insulin dependent diabetes mellitus (median age = 15.2 years; median duration of diabetes = 5.7 years). Eight cases showed HLA DR3-DR4. A regular follow up for six years of these microalbuminuric patients allowed us to follow their progress: two developed macroalbuminuria, five remained microalbuminuric without presenting a significant increase in UAE, and seven reverted stably to normal, after a period of microalbuminuria of between 1 and 5.5 years. These latter patients did not differ from those remaining microalbuminuric either as regards degree of metabolic control or UAE levels during follow up, whereas they did differ as regards a higher prevalence (6/7) of cases with onset of diabetes in peripubertal age. Shield *et al* did not report data regarding age or pubertal stage of the single microalbuminuric patients; we feel this finding could be important in that it could be the pubertal factor which differentiates the natural history for microalbuminuria in childhood from that of adulthood. Puberty, with its important hormonal changes, could in fact act as 'exercise test' for the kidney of predisposed subjects; this would lead to a deterioration which, limited to the pubertal period, would be temporary. Supporting this hypothesis is the fact that six of our 10 patients (all females) with intermittent microalbuminuria, occurring at the beginning of puberty, reverted to normal at the end of puberty itself, that is after menarche.

The predictive value for later overt nephropathy of microalbuminuria is therefore poor among children and young adults and this possible spontaneous normalisation of microalbuminuria should be taken into ac-

count when evaluating the effects of interventional drug treatment in patients of this age.

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Dr Shield comments:

This report is now the third to challenge the predictive value of microalbuminuria defined as 20-200 µg/min (30-300 mg/day) in childhood and adolescence as a recent article from Rudberg and Dahlquist reached similar conclusions.³ The implications of microalbuminuria in this age group need to be addressed prospectively in a large cohort of patients before embarking on either routine clinical screening or interventional trials. A study (microalbuminuria in diabetic adolescents and children, MIDAC), currently in the pilot stage, will address the prevalence and progression of abnormal albumin excretion in approximately 2000 patients and its relationship with glycaemic control, blood pressure, and pubertal status which we agree may be of importance in defining the longer term implications of microalbuminuria.

- 1 Shield JPH, Hunt LP, Karachaliou F, Karavanaki K, Baum JD. Is microalbuminuria progressive? *Arch Dis Child* 1995; 73: 512-4.
- 2 Salardi S, Tacconi M, Zucchini S, Steri L, Mazzanti L, Cacciari E. Evolution of microalbuminuria in diabetic patients treated or not with enalapril. *J Pediatr Endocrinol Metab* 1995; 8: 230.
- 3 Rudberg S, Dahlquist G. Determinants of progression of microalbuminuria in adolescents with IDDM. *Diabetes Care* 1996; 19: 369-71.

Mycoplasma infection and Kawasaki disease

We report for the first time a case of mycoplasma infection complicated by Kawasaki disease, and discuss possible mechanisms.

A 6 year old boy presented with two days of sore throat, fever, vomiting, and abdominal pain. Examination revealed pharyngitis and cervical lymphadenopathy. Jaundice and tender hepatomegaly developed the next day. Investigations revealed a leucocytosis (white cell count $18.7 \times 10^9/l$), deranged liver function (bilirubin concentration 73 µmol/l, alanine transaminase activity 316 units/l), and positive immunofluorescence for IgM to *Mycoplasma pneumoniae*, with a fourfold rise in antibody titre to greater than 256. Testing for other causes of hepatitis was negative. Mycoplasma hepatitis was diagnosed, and treatment with azithromycin started.

His fever persisted, and bilateral conjunctivitis, raised erythrocyte sedimentation rate (ESR) (maximum 125 mm/hour), thrombocytosis (maximum $846 \times 10^9/l$) on day 9, distended gall bladder on ultrasound scan on day 11 and periungual desquamation developed on day 17. Cardiac ultrasound examination was normal.

Kawasaki disease was diagnosed, based on the persistent fever, pharyngitis, cervical lymphadenopathy, bilateral conjunctivitis, raised ESR, thrombocytosis, and eventual periungual desquamation. A distended gall bladder on ultrasound scan is found in 3% of patients with Kawasaki disease.¹ Treatment with intravenous

immunoglobulin and oral aspirin was started, the patient recovered and was discharged on day 25. Follow up at one year is normal.

The aetiology of Kawasaki disease is unclear, but superantigens may play a part.^{2,3} By interacting directly with class two major histocompatibility complex molecules, superantigens can stimulate polyclonal T cell activation with subsequent massive cytokine release. Mycoplasma arthritis has been shown to produce superantigen,⁴ and it is therefore possible that other mycoplasma organisms may do likewise. Superantigen is also produced by staphylococci, streptococci, and retroviruses, all of which have been associated with cases of Kawasaki disease. However, to our knowledge no reports of Kawasaki disease related to mycoplasma infection have been recognised.

We postulate that the development of Kawasaki disease after mycoplasma infection in this patient may have been due to the production of superantigen by the mycoplasma organism.

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- 1 Slovis TL, Hight DW, Philippart AI, Dubois RS. Sonography in the diagnosis and management of hydrops of the gallbladder in children with mucocutaneous lymph node syndrome. *Pediatrics* 1980; **65**: 789-94.
- 2 Curtis N, Zheng R, Lamb JR, Levin M. Evidence for a superantigen mediated process in Kawasaki disease. *Arch Dis Child* 1995; **72**: 308-11.
- 3 Abe J, Kotzin BL, Jujo K, et al. Selective expansion of T cells expressing T-cell receptor variable regions V beta 2 and V beta 8 in Kawasaki disease. *Proc Natl Acad Sci U S A* 1992; **89**: 4066-70.
- 4 Cole BC. The immunobiology of mycoplasma arthritis and its superantigen MAM. *Current Top Microbiol Immunol* 1991; **174**: 107-19.

BCG and prevention of tuberculous meningitis

Thilothammal and colleagues' case-control study on the effectiveness of BCG vaccine in preventing tuberculous meningitis¹ was well conducted and did discuss the possibility of biases, but left some points that deserve clarification and discussion, as they may affect the validity of the results.

Firstly, it is unclear whether the authors accounted for matching in their analysis, as they did not mention it. The appropriate multivariate analysis technique applicable to matched case-control studies is conditional logistic regression, and the use of unconditional logistic regression for matched data bias the odds ratio towards the null.² In this study it would have therefore underestimated BCG effectiveness.

Secondly, children with febrile convulsions may have not been the best possible control group, as apparently the catchment areas were not the same for cases and controls (in the paper the authors argue that neighbourhood controls would have been best, but unfeasible as 'cases coming from different parts of the state was a limiting factor'). Selection bias may have occurred if the study bases (catchment areas) were different,³ and bias would have been towards over or underestimation of BCG effectiveness depending whether the BCG coverage was respectively lower or higher in the catchment area of cases as compared to the catchment area of controls.

Finally, the provided explanations for the lack of effectiveness of BCG in preventing tuberculous meningitis in the 8-12 years age group are all plausible. Further exploration of this finding will be of considerable interest, especially if waning of immunity is the true reason, as this information can be useful

when considerations about the need and the optimal timing for a second dose of BCG aiming at prevention of tuberculosis and/or leprosy are made.⁴

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Dr Thilothammal and coauthors comment:

Each case was not matched with controls as a set. But, block matching was done for the age, in order to have equal number of cases and controls in each age group. Matching was not taken into consideration in the logistic regression analysis.

Though the controls were selected from the hospital, the demographic parameters like type of house, maternal education, nutritional status, and crowding in the house were comparable between cases and controls indicating that both groups have probably arisen from similar population.

We agree with Dr Nishioka that further studies in children of an older age group will be both interesting and useful in guiding policies regarding BCG vaccination.

- 1 Thilothammal N, Krishnamurthy PV, Runyan DK, Banu K. Does BCG vaccine prevent tuberculous meningitis? *Arch Dis Child* 1996; **74**: 144-7.
- 2 Breslow NE, Day NE. *Statistical methods in cancer research. Vol 1: the analysis of case-control studies*. Lyon: International Agency for Research on Cancer, 1980:270-6.
- 3 Wacholder S, McLaughlin JK, Silverman DT, Mandel JS. Selection of controls in case-control studies. I. Principles. *Am J Epidemiol* 1992; **135**: 1019-28.
- 4 Fine PEM. BCG vaccination against tuberculosis and leprosy. *Br Med Bull* 1988; **44**: 691-703.