Other correspondence

Lethal challenge of gnotobiotic weanling rats

I am surprised that a more critical appraisal of the paper by Lee *et al*¹ was not made prior to publication. The paper is poorly constructed and the conclusions invalid.

The mixing of the commensal organisms obtained from the nasopharynx of different infants who had died as a result of SIDS, and injecting them subcutaneously in high concentrations (10⁹/l) and high dose (0.2 ml) cannot be used to explain the phenomenon of sudden unexpected death in infancy.

The authors state that their histology results showed typical inflammatory features in lungs, liver, and heart muscle: such findings are never seen in SIDS.

The authors state in their discussion that: "we found minimal histological evidence of respiratory inflammation a situation analogous to SIDS." Once again, such inflammatory changes are not a feature in cases of SIDS.

The authors state that: "bacteria were, however, recovered after death, indicating that the animals had died with septicaemia." Cases of SIDS never die as a result of septicaemia.

I therefore cannot agree with their conclusion that: "the sudden death of the animal is similar clinically and histologically to SIDS in human infants." Inducing a septicaemia death in a germ free weanling rat bears very little relation to sudden unexpected deaths in infancy.

DM WHITE

District Pathology Laboratory,
Ysbyty Gwynedd,
Penrhosgarnedd,
Gwynedd
Wales

Reference

- 1 Lee S, Barson AJ, Drucker DB, Morris JA, Telford DR. Lethal challenge of gnotobiotic weanling rats with bacterial isolates from cases of sudden infant death syndrome. *J Clin Pathol* 1987;40:1393-6.

Drs Lee, Morris, and Telford reply:

The aim of our investigation was to produce an animal model of sudden infant death syndrome (SIDS) by exposing gnotobiotic weanling rats to bacterial isolates from cases of SIDS cases. The criteria of a successful model, decided in advance were: (i) rapid

death; (ii) minimal histological changes at necropsy; and (iii) no recovery of viable bacteria after death. Our results show modest success with the first two criteria but not the third. The extent to which the findings deviate from the ideal are clearly stated in the paper, and Dr Wayte's criticisms, in so far as they are accurate and pertinent, merely restate the points we emphasised.

His statements on the histological changes are, however, far from accurate. In SIDS it is not uncommon to find a few inflammatory cells in the liver sinusoids, portal tracts, and bladder submucosa, occasional lymphocytes in cardiac muscle, and rather more pronounced inflammation in the upper and lower respiratory tracts.¹⁻³ These findings have been described by many authors. The histological changes in the rats, which died rapidly, were no more severe than this. There was, however, one consistent difference. The rats showed some ballooning necrosis of renal tubular cells which is not seen in SIDS. Thus we have had partial success in modelling SIDS, and the conclusions that we drew are valid. The deaths of the animals, we suggest, were similar both clinically and histologically to SIDS, but the important difference was that the rats died with bacteraemia. Only future work will determine whether this difference is fundamental or whether it will be possible to reproduce these results using bacterial toxins alone.

There is another sense in which Dr Wayte's criticisms are misdirected. There are many theories concerning the cause of SIDS⁴ but most are vague and are not amenable to scientific evaluation. An exception is the promising new idea that common bacterial toxins are important in the pathogenesis of SIDS.⁵ This hypothesis can be studied in the laboratory and our work is the first attempt to investigate it. We never expected complete success at the first attempt but we are sure that our findings are interesting, relevant, and worth reporting. Future work will be directed to mapping the bacterial flora in SIDS, developing bioassay systems to detect lethal toxins, isolating and characterising the toxins, and then searching for their presence in serum and tissues of cases of SIDS using monoclonal antibodies. It is our intention to pursue this research programme as funds become available. We will continue to welcome critical comment when we publish our results.

SM LEE*

JA MORRIS†

DR TELFORD†

Departments of Pathology,
*Manchester Medical School,

Stopford Building, Oxford Road,
Manchester M13 9PT.
†Lancaster Moor Hospital,
Lancaster LA1 3JR.

References

- 1 Valdes-Dapena MA. Sudden and unexpected death in infancy: a review of the world literature. *Paediatrics* 1967;39:123-38.
- 2 Tapp E, Jones DM, Tobin JO'H. Interpretation of respiratory tract histology in cot deaths. *J Clin Pathol* 1975;28:899-904.
- 3 Keeling JW. Sudden infant death syndrome. In: Berry CL, ed. *Paediatric Pathology*. New York: Springer-Verlag, 1981:671-3.
- 4 Milner AD. Recent theories on the cause of cot death. *Br Med J* 1987;295:1366-8.
- 5 Morris JA, Haran D, Smith A. Hypothesis: common bacterial toxins are a possible cause of the sudden infant death syndrome. *Medical Hypotheses* 1987;22:211-22.

Book reviews

Gastrointestinal Oncology. Basic and Clinical Aspects. Ed JS Macdonald. (Pp 373; \$92.75.) Martinus Nijhoff Publishers. 1987. ISBN 0-89838-829-5.

This is the third volume on gastrointestinal cancer of the *Cancer Treatment and Research* series. The chapters are wide ranging, covering carcinogenesis, screening, and endoscopy as well as oncology, all supported by a wealth of references. Inevitably there is much repetition of information but there is also some healthy divergence of views between different contributors. There is excellent documentation on familial adenomatous *Polyposis coli* and cancer families such as the Lynch syndrome. Colorectal surveillance programmes are clearly more popular than those which have been suggested for the oesophagus and stomach. The most important treatment trials are reviewed for each cancer site and for lymphomas with reference to surgical procedures, radiation therapy, chemotherapy, combined modality approaches, and adjuvant therapy. Second look surgery prompted by CEA is strongly recommended for the follow up of recurrent colorectal cancer. This volume will be of interest to those assessing cancer treatment in specific sites.

H THOMPSON