

suggest the presence of a target cell in hematopoietic tissues of susceptible mice and its absence in resistant strains.

28. Active immunotherapy as an adjunct to chemotherapy in the control of solid tumours. G. CURPIE. *Chester Beatty Res. Inst., Belmont, Sutton, Surrey, England.*

Active immunotherapy, used alone, is unlikely to be of value in cases of advanced malignant disease. There is evidence, however, that it may be useful in eliminating small numbers of tumour cells remaining after other forms of treatment. It was decided to test this proposal in chemically induced fibrosarcomas in mice. Various forms of active immunotherapy were tested. Nonspecific stimulation of the immune response with *Corynebacterium parvum* gave the most promising results. This was then combined in various regimens with chemotherapy. Combining cyclophosphamide with subsequent *C. parvum*, 12 days later, produced a significant number of complete and lasting regressions. The results are discussed with reference to the use of nonspecific stimulants of the immune response in man.

29. Glomerulonephritis associated with infected ventriculo-atrial shunt. Immunohistochemical examinations. H. J. PLÜSS, W. H. HITZIG, and U. G. STAUFFER. *Univ. of Zürich, Switzerland.*

Infectious complications in children with ventriculoatrial shunt are common. About one-half of these patients show alterations in the kidneys, usually degenerative changes, occasionally infectious microemboli. A newly recognized manifestation is diffuse glomerulonephritis. Recently we observed a 3 6/12-year-old boy who, 3 years after implantation of a shunt, developed severe signs of nephrotic syndrome. Blood cultures were repeatedly negative, but from the CSF of the valve *Staphylococcus albus* could be cultured. An open kidney biopsy showed severe subacute glomerulonephritis. The kidney disease improved after removal of the shunt. Immunohistochemical examination of the renal biopsy with Coons' indirect method demonstrated distinct precipitates in the glomeruli, containing IgM, IgG, and complement, but no IgA. However, no bacteria could be cultivated. A few cases reported so far presented identical findings. The kidney disease therefore seems to be caused by an immunological reaction of the body towards toxins produced by the low grade pathogens infecting the artificial surface of the shunt.

30. Capsular antibodies to *Escherichia coli* in relation to urinary tract infections (UTI). B. KAJSER, R. BORSÉN, L. Å. HANSSON, J. HOLMGREN, and U. JODAL. *Inst. of Med. Microbiol. and Univ. of Göteborg, Göteborg, Sweden.*

Antibodies to the O antigen of infecting *Escherichia coli* strains have been studied in children with UTI. No relation between levels of O antibodies and protection against UTI has yet been ascertained in humans. We wanted to study the appearance and possible significance of capsular antibodies.

By direct bacterial agglutination with appropriate controls antibodies to K antigens could be demonstrated in a few patients with UTI. For further investigation a few well characterized K antigens of the acid polysaccharide type were isolated from *E. coli* strains by preparative zone electrophoresis. These antigens were employed to study with the passive hemagglutination technique the K antibody response in rabbits immunized with *E. coli*. A marked K and O antibody response mainly consisting of reduction sensitive 19 S antibodies was observed after a single injection of bacteria. After a booster dose a secondary type response including increased titres of 7 S as well as 19 S antibodies was obtained against both K and O antigens. The protective effect of

these rabbit antibodies was evaluated in mouse protection experiments employing for challenge the homologous *E. coli* strain as well as two serologically related strains. These experiments illustrated the serological specificity of protective antibodies. The obtained data may help in the evaluation of the possible significance of the K antibodies appearing in patients with UTI.

31. Neurological maturation in small for date infants. O. FINSTRÖM. *University Hosp., Umeå, Sweden.*

Sixty newborn infants were selected for the present study according to the following criteria. (1) Twenty small for date infants (birth weight below  $-2$  SD according to Swedish standards) without major anomalies or pathological neurological signs. (2) For each small for date infant, one full term infant with normal birth weight and of equal gestational age was selected, 20 infants in all. Their mean gestational age was the same as that of the small for date infants. (3) For each small for date infant, one preterm infant with the same birth weight, appropriate for the gestational age, was selected, 20 infants in all. Their mean birth weight was the same as that of the small for date infants.

All infants were examined neurologically, mainly using the technique of the French school. Thirty neurological signs were used. A neurological score was calculated for each infant.

The mean neurological score for the small for date infants was significantly lower than that for the full term infants of normal birth weight. The difference corresponds to a gestational age difference of 10 days. The mean neurological score for the preterm infants was significantly lower than that for the small for date infants. The finding of delayed neurological maturation in small for date infants is at variance with reports from the French authors. It is also at variance with our own results of motor conduction velocity studies in the same infants. Motor conduction velocity was not significantly reduced in small for date infants.

32. Maternal toxemia, fetal malnutrition, neonatal hypoglycemia and nervous activity of the newborn. F. J. SCHULTE, G. SCHREMPF, and G. HINZE. *Univ. of Göttingen, Germany.*

Twenty-one small for date newborn infants of toxemic mothers were compared as to their neurological maturation with an equal number of normal neonates matched for both age from conception and from birth. The following parameters were studied: nerve conduction velocity (degree of myelination), EEG sleep patterns including their computer analysis (development of the cerebral cortex), sleep cycles (behavioral maturation) and electromyographic evaluation of motor activity (excitatory state of spinal motoneurons). Even in severely malnourished infants peripheral nerve myelination was found to be normal for age whereas the EEG sleep pattern development was sometimes remarkably retarded and/or abnormal. In severely abnormal infants the development of bioelectrical coherence, i.e., a linear correlation of activity between corresponding cortical areas, was markedly disturbed. The spinal motoneurone excitability was found to be lower than normal with a greater variance. The abnormal neurophysiological findings were related to the severity of the maternal nephropathy but no significant correlation could be detected to postnatal blood glucose values of the infants.

33. Later head circumference of infants weighing 1,500 g and less at birth. P. A. DAVIES. *Hammersmith Hosp., London, England.*

Previous follow-up surveys of low birth weight infants have shown increasing neurological and intellectual handicaps with