TRANSVAAL SOCIETY OF PATHOLOGISTS

SUMMARIES OF SCIENTIFIC PAPERS *

MITOTIC ACTIVITY IN THE HUMAN LIVER

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In the absence of hepatic necrosis, marked mitotic activity in the liver is uncommon. A case was described in which numerous mitoses in all phases occurred in the liver of a patient who died of uraemia due to a lower nephron nephrosis. Mitotic activity in the liver in cases dying in acute or subacute renal failure has been previously described and this correlation was confirmed in a small series of cases. The pattern of the differential count of the mitoses resembled that described in malignant cells. The significance of these findings, with particular reference to liver cancer, was briefly discussed.

THE LATE LACTOSE FERMENTING PROPERTY OF *SHIGELLA SONNEI*

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Results of two kinds of fluctuation tests indicated that this property was due to selective overgrowth of the wild type by mutants capable of rapid utilization of the additional source of energy. Mutation rates calculated by three methods agreed reasonably well and an average value is $c\ 1\times10^{-9}$/bacterium/generation. The back mutation rate of the lactose fermenting mutants was calculated by means of continuous culture experiments and proved to be $c\ 1\times10^{-3}$/bacterium/generation. Should these results be applicable *in vivo* it is unlikely that lactose positive variants of *Sh. sonnei* will ever be isolated directly from patients.

CIRRHOSIS OF THE LIVER AND CARCINOMA OF THE LIVER IN JOHANNESBURG

PROF. B. J. P. BECKER, *University of the Witwatersrand, Johannesburg* and DR. C. B. CHATGIDAKIS, *Pneumoconiosis Research Unit, Johannesburg*

A survey of 10,000 consecutive autopsies utilizing the definitions and classification of cirrhosis of the liver proposed by the International Union against Cancer shows that in Johannesburg the incidence of cirrhosis of the liver is equal in European and Bantu males and more frequent in European females than Bantu females. The survey showed that approximately one-third of the cirrhoses in Europeans were of the post-necrotic type, one-third were fatty cirrhoses, one-sixth septal (type A portal) and the remainder miscellaneous; whereas in the Bantu, two-thirds were post-necrotic, one-sixth septal and one-sixth miscellaneous. Fatty cirrhoses in the Bantu were unusual (5%). There were no cases of cirrhosis ascribable to schistosomiasis in either race in this series, and no case of Bantu cirrhosis which was ascribable to haemosiderosis. The authors discussed the infrequency of the classical 'nutritional' cirrhosis (fatty cirrhosis) in Bantu subjects. Similar patterns of cirrhosis have been reported in Uganda Africans by Steiner and Davies. The authors confirmed the high frequency of malignant hepatoma in the Bantu. This was evident in the non-cirrhotic Bantu liver, but the incidence rose to nearly 50% of Bantu cirrhotics, especially in male subjects. This spectacular tendency to malignancy was confined to the post-necrotic and septal types of cirrhosis. The same tendency, but to a lesser degree (8%), was seen in these types of cirrhosis in European subjects. The morphological features of the common type of cirrhosis in the Bantu suggest a viral aetiology.

DIE HISTOLOGIESE DIAGNOSE VAN GOUSIEKTE

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Gousiekte is 'n siekte wat voorkom onder beeste en skape en word veroorsaak deur die vreet van verskillende bossies. Dié veroorsaak 'n chroniese miokarditis waaraan die dier skielik vrek na 'n latente periode van 6 tot 10 weke.

Geen simptome word gesien nie, die dier slaan skielik dood neer. By die lykskouing word alleen 'n algemene veneuse kongestie gesien en in sommige gevalle kan makroskopies 'n fokale fibrose van die miokardium gesien word wat selfs mag lei tot 'n uitgesproke uitsetting van die hart. Histologies kom 'n fokale fibrose voor wat in werklikheid 'n vervanging van beskadigde spierbondels is. 'n Mate van rondesel infiltrasie kan gesien word. Die letsel is baie fokaal en kan maklik misgekyk word. Die letsel kom gewoonlik voor in die punt van die hart.

Met behulp van kleurskyfies word die histologiese letsels wat veroorsaak word deur verskillende plante ontleed in 'n poging om 'n histologiese diagnose te maak. 'n Histologiese ondersoek van bepaalde dele van die hart is die enigste betroubare metode van ondersoek wat tot 'n diagnose kan lei.

THE INTERACTION OF ERYTHROCYTES AND BACTERIAL ENDOTOXINS. I. ERYTHROCYTE UPTAKE OF ENDOTOXINS

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In recent years, many authors have employed endotoxin-coated erythrocytes as antigen suspensions for serological studies. A characteristic feature has been the diversity of opinions in regard to the sensitivity of these haemagglutination tests. Some workers found that the tests were considerably more sensitive than the corresponding bacterial agglutination tests. Others held the opposite view.

The present study deals with an investigation into the factors influencing the haemagglutination reaction.

The endotoxin was derived from *S. typhi* (TO-901) as a dehydrated powder. Rabbit erythrocytes, washed and suspended in isotonic saline, were used throughout the experiments.

A unit of endotoxin (EAU) was defined as the smallest amount of endotoxin—under standard conditions—capable of rendering a 2 ml. 10% suspension of erythrocytes agglutinable in homologous serum. One EAU was found to be equivalent to 0·16 mg. of the dehydrated endotoxin, but the actual uptake required for agglutination, was shown experimentally to be 0·12 mg.

The uptake of endotoxin was dependent not only on the absolute amount of endotoxin present, but also on its concentration, to which the speed of uptake was proportional. Furthermore, the speed of uptake varied with the temperature, being 5-6 times faster at 37°C than at 4°C.

The maximum uptake of endotoxin was not conclusively established, but it was shown that the erythrocytes could bind at least 200-225 times the minimum amount (0·12 mg.) required for haemagglutination under standard conditions. The more antigen attached to the erythrocytes, the less anti-serum they require for agglutination; thus, the titre of a given serum will vary according to the quantity of endotoxin absorbed onto the cells.

It may be concluded that the discrepancy in results obtained by haemagglutination is due mainly to quantitative differences in endotoxin coating. This could be overcome by rigorous standardization of which accurate measurement of endotoxin is an integral part.

ON THE HISTOGENESIS OF KAPOSI'S HAEMANGIOSARCOMA

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The non-specific esterases, pseudocholinesterases, and acid and alkaline phosphatases, have been investigated in biopsies from 6 clinically and histologically typical cases of Kaposi's haemangiosarcoma. A strong pseudocholinesterase and acid phosphatase was found in the spindle shaped cells of the tumour. The non-specific esterase was detected only in occasional phagocytes in the vicinity of areas of haemorrhage and the alkaline phosphatase was localized to the capillary walls. These findings are in favour of a neural rather than a reticulo-endothelial, muscular, fibroblastic, or endothelial origin of the tumour.

* Read at a meeting of the Society, held at Onderstepoort on 14 March 1959

IMMUNITY STUDIES ON *CL. WELCHII* TYPE B BETA TOXIN

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Cl. welchii Type B is responsible for lamb dysentery in sheep. The beta toxin produced by this organism was converted into toxoid by means of formalin and precipitated with 1·5% potassium alum. Groups of sheep showing no antitoxin level in their blood were given two injections of the A.P.T. at varying intervals. The injections were given at the following levels of dosage: 6·25, 25, 50, 100, and 200 Lf. The antitoxin levels of the blood of these sheep were determined at weekly intervals after the second injection. It was proved statistically that two injections of 6·25 Lf A.P.T., spaced at an interval varying from 2 to 5 weeks, produced the same level of immunity as the higher doses administered under the same conditions.

NORMAL PROSTATIC ACID PHOSPHATASE VALUES IN BANTU AND EUROPEAN MEN

DR. L. S. DE VILLIERS, *Department of Pathology, University of Pretoria*

In a comparative study of acid phosphatase values in 'normal' Bantu and White men higher values were found in the Bantu of both the total acid phosphatase as well as the specific prostatic acid phosphatase according to the Fishman-Lerner method. An attempt was made to explain these differences in the findings reported of higher oestrogen levels in the Bantu.

THE HISTOLOGY OF THE CYTOPATHOGENIC CHANGES PRODUCED IN MONOLAYER EPITHELIAL CULTURES BY CERTAIN VIRUSES

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A brief description was given of the technique of making slide preparations of roller tube cultures for detailed microscopic examination. The cytopathogenic changes produced by the following viruses were described and illustrated with photomicrographic coloured transparencies:

'BZD'—an orphan virus, originally isolated in lumpy skin disease material.

'Neethling' and 'Allerton' viruses associated with lumpy skin disease.

'Ecbo'—an orphan virus isolated from bovine faeces and probably belonging to the polio group.

Rift Valley fever and Wesselsbron disease viruses.

Thereafter Dr. K. E. Weiss, of the Onderstepoort Virology Department, described the influence of varying concentrations of lactalbumen in the media on the cytopathogenesis of 'Neethling' virus in tissue culture, also illustrated with coloured transparencies.