

ABSTRACTS

1. CLINICAL SIGNIFICANCE OF TUBERCULOSTATIC ACTIVITY OF URINE

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Received for publication, December 12, 1966.

Combined use of antituberculous drugs is essential for the elevation of the therapeutic effect of the drugs after the appearance of resistant tubercle bacilli. In such circumstances, it is important to know beforehand the effectiveness of the combined use of the drugs as easily as possible.

For this purpose the author gave a daily dose of the drugs at one time and obtained a urine sample 3.5 to 4 hours later. Dilutions of the urine sample were prepared with a Dubos culture media and tested for inhibiting activity against the tubercle bacilli derived from the patient.

When the combined use was adequate, bacilli growth was not observed even in a test tube containing 1 in 1,000 diluted urine, while in cases where no therapeutic effect was expected growth was luxuriant in the tube containing 1 in 5 diluted urine as in control tube without urine.

Thus, this method is considered to be of use clinically because it gives an index for the administration of proper drugs for the therapy of tuberculosis.

2. INHIBITION OF *STREPTOCOCCUS FAECALIS* BY BIS (2-HYDROXY-3,5-DIBROMOPHENYL AZO)-4-N- PROPYLPHTHOGLUCINOL *IN VITRO* — WITH SPECIAL REFERENCE TO ITS ACTION MECHANISM

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Received for publication, December 6, 1966.

In order to obtain some information regarding the mechanism of action of bis (2-hydroxy-3,5-dibromophenylazo)-4-n-propyl-phthoroglucinol Azo-106 as a possible anti-cancer agent, a series of experiments were performed employing bacterial cell system *in vitro*.

Firstly, a number of biogenous compounds including amino acids, nucleotides and

their analogues, vitamins, folic acid, folinic acid and others, were tested for their effect on the growth-inhibition of *Str. faecalis* by Azo-106. Folinic acid, on a molar basis, was very potent in causing true reversal for the inhibition of growth of the bacteria. The growth-inhibition by Azo-106 was found to be partially overcome by methionine, tryptophan, pantothenic acid, thymine and choline. Many other compounds including folic acid were entirely ineffective in this respect.

Secondly, the ^{32}P incorporation experiments have shown that Azo-106 markedly inhibited the incorporation of ^{32}P into both RNA and DNA of *Str. faecalis* cell.

These data suggest the possibility of an inhibition of *de novo* synthesis of purine and pyrimidine nucleotides.

3. ACUTE PEPTIC ULCERATION IMMEDIATELY FOLLOWING CARDIAC SURGERY

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Received for publication, Nov. 30, 1966.

In four cases among 97 patients of cardiac surgery (72 survivals), an acute gastrointestinal ulceration occurred postoperatively. In one case, an emergency gastrectomy was performed because of perforation of the duodenal peptic ulcer with massive bleeding.

The exact mechanism responsible for acute ulceration of the gastrointestinal tract following cardiac surgery is not well understood. A remarkable increase in gastric secretion and deterioration of the reparative process in the gastrointestinal mucosa during and after surgery provoked by the response of the hypothalamus-vagal and hypothalamus-pituitary-adrenal axes are considered to be the proximate cause.

The importance of prompt aggressive treatment of postoperative cardiac patients with hemorrhage is to be emphasized.

4. EVALUATION OF FLUOTHANE VAPORIZER

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Vaporizing efficiencies of seven types of fluothane vaporizers (5 fluotecs, 2 fluoroethas, 1 Octavian vapor vaporizer, 1 Ohio double bottle vaporizer, 1 Foregger copper kettle, 1 Acoma copper kettle and 1 BOC Halox vaporizer) were studied by means of the gaschromatographic technique. The results obtained were as follow :

Except one of the two fluoroethas and the Ohio double bottle vaporizer given lower fluothane vapor concentrations than indicated by the dial setting, the concentration of fluothane vapor delivered from the above-mentioned vaporizers with a constant total flow rate (4l/min.) of oxygen at 23 - 25°C was almost consistent with their dial settings.

In the bubble type vaporizer, the flow rate of the carrier gas (oxygen) through this was so little that it was difficult to constantly maintain. In addition, it was hard to keep a constant concentration because of the remarkable decrease in temperature in some bubble types of vaporizers.

The vaporizing efficiencies of the fluotecs at vapor temperatures of 16 °C and 24 °C were much the same. When the flow rate was less than 4 l/min. through the fluotec, the relationship between the actual and indicated concentration of fluothane vapor was similar to the results reported up to that time. When the inlet and outlet were connected inversely, both the fluotec and fluoroetha vaporized much higher concentrations than indicated.

5. JIRGL TEST IN THE DIFFERENTIAL DIAGNOSIS OF JAUNDICE

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Received for publication, August 10, 1966.

The authors of this paper carried out the Jirgl test and estimation of serum alkaline phosphatase and of serum muco-protein in 102 cases with diseases of the liver, biliary tract, pancreas or stomach, including 53 cases with jaundice, and came to the conclusion as follows.

1) The results of the Jirgl test showed high positive percentage in cases with obstructive jaundice, which corresponded to the reports hitherto published and the results revealed remarkably high positive percentage in cases with obstructive jaundice due to pancreatic diseases, especially in the group of icteric cases due to tumors of the biliary tract and pancreas.

2) In the cases proving positive in the Jirgl test, there was a high tendency that the positive percentage was high in cases giving high value of the serum alkaline phosphatase and of the serum muco-protein.

6. IMMUNOLOGICAL STUDIES OF CELL MEMBRANE SYSTEM IN THYROID GLAND

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Received for publication, January 10, 1967.

Three lipoprotein (LP) preparations prepared from the thyroid gland by different methods, i.e. LP-I, LP-II, LP-III, have almost the same immunological structure,

The immunization of animals with heterologous or homologous thyroidal lipoprotein preparations in Freund's complete adjuvant produced antibodies, which were investigated by skin reactions, gel diffusion method, complement-fixation and immunofluorescent antibody techniques.

The thyroidal tissue of the immunized animals with these LP preparations, showed hyperplasia of the epithelial cells with degeneration, disappearance of colloid, and lymphocytic infiltration.

Some sera from Hashimoto's thyroiditis showed positive immune adherence hemagglutination tests with heterologous and homologous lipoprotein preparations, and some of them and sera from subacute thyroiditis produced a single haze precipitation line which is distinct from the line of the thyroglobulin-antithyroglobulin in gel-diffusion method.

These results suggested that a lipoprotein which constituted the cell membrane system of thyroid gland played an important role in the pathogenesis of thyroiditis.

Publications not appearing in the Ann. Rep. Tbc.

Kanazawa (1966)

1) Ito, R., Sassa, K. and Akiyama, M. : Hemagglutination phenomenon between tanned erythrocytes and serum of guinea pigs. Effect of chemotherapeutic treatment of tanned erythrocyte-agglutinating activity of serum in experimental tuberculosis of guinea pigs. Jap. J. Tuberc., **13**, 9, 1965.

The tanned erythrocyte-agglutinating activities of the sera of guinea pigs infected with H37Rv strain of tubercle bacilli and the animals treated with dihydrostreptomycin (DSM), isoniazid (INH), kanamycin (KM), and p-aminosalicylate (PAS) were examined. The animals of the three groups treated with DSM, INH and KM, in all of which the gross extent of the tuberculous disease in the visceral organs was minimal, has low levels of serum activity, as compared with the strong activity in the untreated control animals. Guinea pigs treated with PAS, in which the extent of the disease was comparable to that seen in the untreated controls, exhibited a high degree of serum activity.

2) Ito, R. : Occurrence of tanned erythrocyte agglutinating factor in various mammalian sera. Nature, **212**, 626, 1966.

In an attempt to identify the tanned erythrocyte agglutinating factor (TEAF), serum proteins of guinea pigs and several other mammals were separated by fractional precipitation with saturated ammonium sulfate solution. TEAF was found to be widespread in occurrence and to vary markedly in its distribution patterns in serum proteins between various species. There was also evidence for the presence of inhibitors.

3) Okamoto, H., Shoin, S., Minami, M., Koshimura, S., and Shimizu, R. : Experimental Anticancer Studies. Part XXX. Factors Influencing the Streptolysin S-forming Ability of Streptococci Having Anticancer Activity. Japan. J. Exp. Med., **36**, 161 - 174, 1966.

When hemolytic streptococci were suspended in BBM (Bernheimer's medium deficient in RNase-core), their ability to form streptolysin S withstood to heating at 45 °C for 30 minutes. Furthermore, the streptolysin S-forming capacity of streptococci, received such heat-treatment in BBM, was 1.5 - 2 times greater than that of the not heat-treated cocci.

By contrast, streptococci received such heat-treatment in other kind of media, such as 0.85% NaCl and phosphate-buffered saline, have been observed to undergo complete loss of their ability to form streptolysin S. The heat-treatment of streptococci in BBM containing penicillin ($2 - 4 \times 10^4$ units/ml) caused not only a complete disappearance

of their streptolysin S-forming ability but also a significant decrease in their virulence for animals.

A possibility of transformation by penicillin of streptolysin S-forming factor to anticancer factor was also discussed briefly.

4) Okamoto, H., Minami, M., Shoin, S., Koshimura, S., and Shimizu, R. : Experimental Anticancer Studies. Part XXXI. On the Streptococcal Preparation Having Potent Anticancer Activity. *Japan. J. Exp. Med.*, **36**, 175 - 186, 1966.

Experiments on the factors influencing the anticancer ability of hemolytic streptococci suspended in BBM (Bernheimer's medium deficient in RNase-core) and in 0.85% NaCl were performed with following results :

1) The preincubation at 37°C for 20 minutes, followed by heating at 45°C for 30 minutes of a suspension of living streptococci in BBM containing $2 - 4 \times 10^4$ units/ml of penicillin yielded a very potent anticancer preparation [PC-B-45] ; the streptococcal preparation thus obtained was tested to be highly effective (more so than any of the streptococcal preparations so far examined) in inhibiting the tumor "takes" and growth of Ehrlich ascites carcinoma in mice.

2) Such potent streptococcal preparation could not be obtained with the use of 0.85% NaCl as the suspending medium for streptococci.

3) Additionally, some properties of the PC-B-45 preparation relating to the points in its favour and unfavour as a possible anticancer agent were discussed briefly.

5) Ujiie, T. : Experimental Anticancer Studies. XXXII. Anticancer Activity of Some Nitrofurans Derivatives. *Chem. Pharm. Bull.*, **14**, 461-466, 1966.

Eight nitrofurans related to 2-[2-(5-nitrofuryl)vinyl]-4-quinolinecarboxylic acid and 6 Schiff bases of 5-nitrofuraldehyde were prepared and tested for their effect upon Ehrlich ascites carcinoma in mice. As the results, 2-[2-(5-nitrofuryl) vinyl]-8-quinolinol acetate and 2-[2-(5-nitrofuryl)vinyl]-4-quinolinecarboxylic acid hydrazide were shown to be very effective in inhibiting the cancer cell growth.

6) Kurata, Y. and Okada, S. : Immunological Studies of Insoluble Lipoproteins. 1. Antigen Analysis of Thyroidal Lipoproteins. *Int. Arch. Allergy*, **29**, 495, 1966.

Three lipoprotein preparations prepared from the thyroid gland by different methods, i.e. iodide trapping lipoprotein fraction (LP-I), the insoluble lipoprotein fraction (LP-II) and the fraction of double layer membrane with total thickness of about 80 Å prepared from LP-II (LP-III), have almost the same serological structure. The immunization of animals with heterologous or homologous lipoprotein preparations in Freund's complete adjuvant produced autoantibodies and the sign of thyroiditis in the thyroid gland.

The results suggested that a lipoprotein which constituted the membrane system of

epithelial cells of thyroid gland played an essential role in the pathogenesis of thyroiditis.

7) Kurata, Y. : The Significance of the Antigens of the Cytoplasmic Membrane System in the Thyroiditis. Jap. Med. J. (Junior), **51**, 10-12, 1966.

8) Kurakane, K. : Effects of the endocrine glands on the intestinal absorption. J. Clin. Sci., **2(7)**, 891, 1966.

Having reviewed reports on investigation of the influences of the endocrine glands on the intestinal absorption, we have come to the conclusion that little information is available which clarified the effects of various hormones on the absorption of principal nutrients in the intestine.