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Abstracts Of Recent Publications Of The Professional Staff Of The Henry Ford Hospital And The Edsel B. Ford Institute For Medical Research

ABSTRACTS OF RECENT PUBLICATIONS OF THE PROFESSIONAL STAFF OF THE HENRY FORD HOSPITAL AND THE EDSEL B. FORD INSTITUTE FOR MEDICAL RESEARCH

*COMPARATIVE VALUE OF X-RAY DIFFRACTION AND INFRARED SPECTROPHOTOMETRY IN IDENTIFYING CERTAIN STEROLS AND THEIR DIGITONIDES. W. T. BEHER, J. PARSONS, AND G. D. BAKER. Anal. Chem. 29:1147, 1957.

The relative usefulness of infrared spectrophotometry and x-ray powder diffraction methods for the identification of some biologically occurring sterols has been investigated. The data show that x-ray powder diffraction methods are superior to infrared spectrophotometry for the identification of sterols in the C_{27} to C_{29} series. On the other hand, neither method is capable of indentifying the sterol digitonides. Two hypotheses are proposed to explain the similarity of the absorption spectra of digitonin and sterol digitonides. Experimental evidence disclosed that the digitonin masks the characteristic absorption bands of the sterols. The use of x-ray diffraction definitely establishes sterol digitonides as chemical compounds, whereas infrared spectrophotometry does not distinguish between a simple mixture and a corresponding digitonide.

THE USE OF THE THREE-SECOND VITAL CAPACITY AND DIRECT TESTING OF BRONCHIAL ALLERGY. G. L. BRINKMAN AND J. H. BURGER. J. Allergy 28:346, 1957.

Direct bronchial testing of patients with clinical evidence of ragweed sensitivity was undertaken. The Vital Capacity and 3 second Vital Capacity were obtained prior to and following the inhalation of increasing strengths of an aerosol of ragweed antigen, with the following results:

Four patients with asthma and the skin test positive to ragweed were tested and all 4 gave a positive bronchial test.

Ten patients with asthma but a negative skin test to ragweed were tested and only one positive bronchial test obtained.

Three patients with vasomotor rhinitis and a positive skin test for ragweed were also studied and one positive bronchial test obtained.

Reduction in the 3 second Vital Capacity proved to be no more sensitive than reduction in the Total Vital Capacity. It was concluded that despite the known limitations of skin testing patients with asthma, direct bronchial testing gives insufficient additional information to justify it as a routine procedure.

THE USE OF ACTH AND CORTISONE IN TRICHINOSIS. G. L. BRINKMAN AND L. KOOS. J. Michigan M. Soc. 56:867, 1957.

Three cases of trichinosis in one family are reported. All three cases were treated by steroid therapy with dramatic and immediate symptomatic responses. Review of the world literature reveals that twenty-nine other cases of trichinosis treated with steroid therapy showed similar dramatic responses. There have been no fatalities amongst the cases so treated. The mode of action of these drugs is briefly reviewed

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and the reason for advocating maintenance of therapy for at least six weeks is given.

THE PROPHYLAXIS OF CARDIAC ARRHYTHMIAS COMPLICATING PULMONARY SURGERY. C. I. CERNEY. J. Thoracic Surg. 34:105, 1957.

Sixteen cases of cardiac arrhythmias occurring in the postoperative course of pulmonary lobectomy and pneumonectomy are presented. This represents an incidence of 29.4 per cent, following pneumonectomy, and 14.3 per cent, following lobectomy, or a combined incidence of 20.8 per cent following pulmonary surgery in 77 cases Possible etiological factors are discussed and because of the incidence, morbidity, and possible mortality, routine prophylaxis with quinidine and atropine is suggested. Since the majority of these patients can take oral medication immediately after surgery, the proposed schedule would be: (1) Quinidine 0.2 gm. four times daily, with an added 0.2 gm. of enteric-coated quinidine at bedtime, and (2) atropine 1 mg. four times daily (or other anticholinergic equivalent). Such medication should be started on the first postoperative day and continued through the thirtieth postoperative day. A constant expectant observation of the patient should be continued through the postoperative course and should arrhythmia occur, in spite of prophylaxis, rapid digitalization with Cedilanid or acetyl strophanthin should be instituted. If slowing does not occur, therapeutic doses of quinidine should be given without delay.

LUMBAR AND PERIPHERAL ARTERIOGRAPHY: TECHNICS AND RADIOLOGIC ANATOMY. W. R. EYLER. Radiology 69:165, 1957.

Lumbar aortography and demonstration of the distal branches of the aorta have become accepted and commonplace procedures. This presentation concerns primarily some of those aspects of the roentgen anatomy demonstrated by aortography and arteriography which are important in deciding upon and planning the surgical approach to the arteriosclerotic aorta and its lower branches. The material is drawn from a series of 600 aortograms and arteriograms. That an arteriosclerotic abdominal aneurysm is a lethal lesion has been well shown. Though the end-results of surgical replacement remain to be determined, there is now no doubt that a graft is frequently life-saving. Similarly, relief of intermittent claudication and the preservation of a limb that would otherwise be amputated are ample justification for surgical intervention in arterial insufficiency of the lower limbs. Arteriosclerotic aneurysms usually cause a lateral deviation and elevation of the aorta proximal to the aneurysm. This is of diagnostic and localizing value, particularly when the aneurysm shows only a narrow channel by aortography. The extent of segmental arterial disease is best shown by serial filming. The use of long serial films diminishes the amount of contrast material required. A single aortic injection can be used to demonstrate the vascular tree from the level of the renal arteries to the division of the popliteals. A simple device is described which facilitates serial filming with 14 x 36-inch cassettes.

THE BILLROTH I GASTRECTOMY. L. S. FALLIS. Surg., Gynec. & Obst. 105:107 1957.

Re-establishment of gastro-intestinal continuity after gastrectomy by direct anastomosis of the stomach to the duodenum was first carried out by Billroth in 1881. Since that time this procedure, known as the Billroth I gastrectomy, has had short periods of popularity alternating with long intervals of disinterest. The recent resurgence of favor that this operation has enjoyed lends an opportunity to again reassess

the value of the technique.

The operation is attractive from a physiologic and an anatomic point of view, but in the final analysis its merit must depend on proving that the end-results are better and that mortality and morbidity rates are not increased over those obtained with the Billroth II gastrectomy (gastrojejunostomy). There is some evidence to show that patients after Billroth I gastrectomy are more likely to regain or even surpass their normal weight level. Apart from this one feature there seems to be little to influence a choice between the two operations though the Billroth I is clearly indicated in re-operations for jejunal ulceration and as a measure to alleviate the dumping syndrome sometimes appearing after the Billroth II operation.

OBSERVATIONS ON INFESTATION BY SCHISTOSOMA MANSONI IN PUERTO RICAN TROOPS. W. S. HAUBRICH AND R. M. WELLS. U. S. Armed Forces M. J. 8:1093, 1957.

In a study of 43 young native Puerto Rican soldiers stationed in the continental U. S., slightly more than one third were found to harbor *Schistosoma mansoni* as manifested by ova in the stools (11 cases) or by granulomas in the rectal mucosa (11 cases) and liver (5 cases). Almost with exception the infestations were latent and asymptomatic. Active treatment of such disease by antimony potassium tartrate is attended by a high incidence of incapacitating side reactions, and its long-term value is debatable.

SEPSIS IN NORMAL AND PREMATURE INFANTS WITH LOCALIZATION IN THE HIP JOINT. P. J. HOWARD. Pediatrics 20:279, 1957.

The case reports of five patients with sepsis, localizing in the hip joint, are presented. The date of onset was before 30 days of age. The weights at birth were in the premature range in three, normal in two; the first clinical sign was swelling of the region of the hip and thigh. The organisms were coagulase positive staphylococci in three cases, unknown in two cases. The differential dignosis included cellulitis, trauma to the hip, and septic arthritis with abscess formation. Poliomyelitis, cancer, toxic synovitis and osteomyelitis of the femur were considered. Roentgenograms have been selected to show the slightness of the changes at onset, and the changes at 1, 5, and 12 years of age. Treatment should include general supportive measures, including administration of blood and nutritive elements, antibiotics and early drainage of the joint to prevent permanent damage of the head of the femur. This condition must be suspected in every instance of regional swelling of the hip in the newborn infant. Such swelling is an urgent indication for diagnostic aspiration of the joint.

LUMBAR AND PERIPHERAL ARTERIOGRAPHY. D. E. SZILAGYI. Radiology 69:177, 1957.

In surveying the more important vascular lesions in whose management lumbar and peripheral arteriography offers valuable assistance, the pathologic and clinical characteristics of occlusive and aneurysmal diseases of the aorta and its large branches have been briefly summarized. The essential role of arteriography in the rational planning of the surgical attack in occlusive arterial disease is stressed and the help to be gained from angiographic studies in the handling of aneurysmal disease is pointed

out. Brief mention has been made of some other peripheral arterial lesions in relation to which the applicability of arteriography must be kept in mind.

*STUDIES ON SUCCINIC DEHYDROGENASE V. ISOLATION AND PROPERTIES OF THE DEHYDROGENASE FROM BAKER'S YEAST. T. P. SINGER, V. MASSEY AND E. B. KEARNEY. Arch. of Biochem. & Biophysics 69:405, 1957.

1. The succinic dehydrogenase of baker's yeast has been solubilized and isolated from the particulate fraction of the cell wherein the enzyme is localized. The best preparations obtained were 65% pure by ultracentrifugal analysis.

2. The enzyme is an amber-brown protein, containing 4 atoms of iron and 1 mole of flavin per mole of protein. No method has been found to remove either the iron or the flavin without denaturation of the protein. The iron was readily liberated in the inorganic form by acid or thermal denaturation, but separation of the flavin form the protein required extensive proteolytic digestion of the latter. The flavin, set free in this manner, was not free FAD but, like that from the beef heart enzyme, appeared to be in bound forms, possibly as peptide derivatives.

3. The action of the enzyme is readily reversible. Inactivation on aging usually entailed a much greater loss of succinic dehydrogenase than of fumaric reductase activity, in accord with previous findings that the acceptors required in the former assay act by way of the iron while the electron donors used in the latter assay by-pass the iron and that aging alters the reactivity of enzyme-bound iron.

4. The following aspects of the action of the enzyme have been studied: effects of pH and temperature, specificity for electron carriers, inhibition by sulfhydryl reagents and iron complexors, kinetic constants for succinate, malonate, and fumarate, and turnover number.

5. In most respects the yeast enzyme resembles closely its counterpart in beef heart mitochondria.

RELATIONSHIPS OF CEREBRAL DISORDERS TO FAULTS IN DENTAL ENAMEL. W. F. VIA, JR. AND J. A. CHURCHILL. A.M.A.J. Dis. of Child. 94:137, 1957.

It is suspected that some of the abnormal processes causing damage to the brain might also produce defects in the enamel forming on the teeth at the same time. Hence a study was begun to determine the correlation between cerebral disorders and enamel hypoplasia. If a correlation exists, then the observed enamel faults in combination with suspected casual events from the medical history may allow a more accurate dating of the onset of the cerebral disorder.

Detailed information concerning heredity, gestation, birth and subsequent development was obtained from the parents or medical records of 100 children who had definite indications of cerebral dysfunction determined by clinical and laboratory means. The teeth of these children were examined and data concerning the location and type of enamel faults were tabulated. In addition 100 apparently normal children were examined for enamel faults. Those that had enamel defects were investigated to see if they had cerebral damage. The medical history of 40 of the normal children was investigated so that a comparison of possible etiological factors could be made.

The incidence of enamel hypoplasia among the normal group was 10%. In sharp contrast to this, 68% of the children in the cerebral damage group showed enamel

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hypoplasia. A comparison of the two groups revealed a Chi Square value of 58.84 indicating a P value considerably lower than 0.001. In the cerebral disorder group, 58 children had neonatal enamel hypoplasia and 19 children had prenatal enamel hypoplasia. Some children had both prenatal and neonatal hypoplasia. There was no prenatal hypoplasia noted in the normal group. The rate of enamel hypoplasia, neonatal, prenatal or both for each manifestation of cerebral disorder was found to be: Athetosis, 100% of 5 cases; spastic diplegia, 100% of 22 cases; hemiplegia, 43% of 14 cases; the epilepsies,, 54% of 22 cases; oligophrenia, 52% of 19 cases; combined disorders, 79% of 28 cases.

*MAGNETIC ALIGNMENT OF SINGLE IRON PARTICLES. JOHN H. L. WATSON. J. App. Physics, 28:821, 1957.

The orientation of single alpha iron particles under the effect of magnetic fields up to 25,000 gauss is described from electron micrographs of ultrathin sections cut from blocks of the particles which have been oriented in a liquid monomer and then "frozen" into position during polymerization. The micrographs demonstrate linear, end-to-end attachment; circular, end-to-end attachment and streaming of particulate networks in the general direction of the aligning fields. The method has been developed to study directly the arrangement and distribution of elongated, fine particles of iron, freely suspended or packed and oriented in a liquid medium. It is useful for studying the extent and manner of heterogeneous particle packing, and of particle alignment under the influence of outside force fields.

Macroscopically the particles oriented easily but microscopic demonstration of alignment is difficult probably because the particles tend to minimize their magnetostatic energies rapidly and to form closed magnetic circuits. The method may provide a means of obtaining statistically quantitative estimates of the packing fraction and give direct observation of certain theoretical aspects of fine particle magnetism, particularly shape anisotropy.

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