Abstracts of Recent Publications of the Professional Staff of the Henry Ford Hospital and the Edsel B. Ford Institute for Medical Research

Follow this and additional works at: https://scholarlycommons.henryford.com/hfhmedjournal

Part of the Life Sciences Commons, Medical Specialties Commons, and the Public Health Commons

Recommended Citation

This Article is brought to you for free and open access by Henry Ford Health System Scholarly Commons. It has been accepted for inclusion in Henry Ford Hospital Medical Journal by an authorized editor of Henry Ford Health System Scholarly Commons.
ABSTRACTS OF RECENT PUBLICATIONS OF THE PROFESSIONAL
STAFF OF THE HENRY FORD HOSPITAL AND THE EDSEL B. FORD
INSTITUTE FOR MEDICAL RESEARCH

SCOPOLAMINE AS A PREOPERATIVE SEDATIVE IN CHILDREN. A. A.

Scopolamine has proven to be superior to atropine, methantheline bromide, and
various other drugs as a medication to ease apprehension, to dull awareness of the
clinical surroundings, to reduce salivary and mucous flow, and to facilitate the
administration of anesthesia for the extraction of children's teeth. Scopolamine has
in addition, the advantage of producing a peculiar light amnesic action including the
induction of anesthesia.

Tablets of 1/150 grain and 1/200 grain sizes are used. They may be admin-
istered orally either by the parent one half hour prior to an appointment or by the
staff upon arrival of the patient at the office. Two and three year old children are
given one half of one 1/200 grain tablet; four, five and six year old children receive
one 1/200 grain tablet; older children take the adult dose of 1/150 grain.

No deleterious effects of great importance have been noted, although some
children develop a transient rash and dilatation of the pupils for up to four hours.
Although the cases studied received general anesthesia, it is recommended that its
efficacy be studied when used for routine pedodontic procedures under local anesthesia.


In a study based on 155 cases of minor oral surgery at Henry Ford Hospital
chlorpromazine was found to be an excellent pre-anesthetic agent. It reduces a patient's
apprehension without compromising his ability to respond and cooperate. With
chlorpromazine, smaller dosages both of anesthetic and pre-anesthetic medications
were required and induction was noticeably smooth and rapid; there was less post-
operative vomiting.

For pre-operative sedation, 25 mg. of chlorpromazine may be given intramuscularly
to adults and 10 mg. orally to children about 30 to 45 minutes pre-operatively. The
tachycardia and hypotension reported elsewhere in the literature in this drug have
arisen from daily doses of 100 mg. maintained for a week or more; these complications
did not appear in this series. Chlorpromazine has not yet, however, been evaluated
for dental operations in patients in a sitting position, as opposed to the supine position
on an operating table.

CAUSE OF DEATH IN RUPTURED INTRACRANIAL ANEURYSMS. J. BEBIN

This study of the consequences of the rupture of intracranial aneurysms covers
a twenty-one year period during which time a tentative diagnosis of intracranial
aneurysm was made in 243 patients out of 713 admitted to the University of Michigan
Hospital with a diagnosis of subarachnoid hemorrhage.

Fifty-nine post-mortem examinations were done. In 35 cases death was thought
to be due primarily to rupture of an intracranial aneurysm. Of the other 24 cases,
no aneurysm was found in 8, 6 died from causes other than rupture of an aneurysm,
5 were considered to be definitely post-operative deaths, 4 died as a result of cerebral
infarction in association with the aneurysm, and one patient died from pneumonia
alone. Of the 35 cases in which death was thought to be due primarily to rupture
of the intracranial aneurysm, intracerebral hemorrhage was found in 1, subdural
bleeding in 2, intraventricular hemorrhage in 6, a combination of intracerebral and
intraventricular bleeding in 26. There was a close relationship between the amount
of bleeding into areas other than the subarachnoid space and the length of survival
after the onset of the last, or fatal, hemorrhage. Deaths from intracranial aneurysms
are thought to be due to one or more of the following causes: hemorrhage, operations,
ischemic infarction, pneumonia, or compression and obstruction by a ruptured aneurysm
acting as a tumor mass. Deaths due to hemorrhages from rupture of an intracranial
aneurysm result from hemorrhage into other areas of the brain in addition to the
subarachnoid bleeding. The most common is intracerebral hemorrhage with or without
intraventricular hemorrhage. None of these patients died of subarachnoid hemorrhage
per se.

EXPERIENCE WITH URINARY BLADDER REGENERATION. A. W. BOHNE
Abstracts

The many pitfalls associated with diversion of the upper urinary tract are well known. In an attempt to overcome some of these difficulties, experimental work on bladder regeneration was started in 1950. The animal used was the dog. By this experimental work, the remarkable ability of the bladder to regenerate was demonstrated.

Subsequently, seven human cases have had a subtotal or total cystectomy. Reasons for these operative procedures were: two cases for severe, chronic, intractable interstitial cystitis; four cases of diffuse carcinoma of the bladder; and one case for arrested urinary tract tuberculosis. These seven cases were reported. It was felt that regeneration of the urinary bladder does occur in humans, as in dogs.

A functioning reservoir develops provided intermittency of filling and emptying can be maintained after the mold is removed. The reconstructed organ contracts to the extent that functioning capacity is no longer maintained when continuous drainage is necessary.

The post-operative course for humans is long and many complications are prone to occur.


A case is reported of a 63 year old man who presented with signs and symptoms suggestive of right renal colic. Intravenous pyelograms showed delayed function in the right kidney, a calculus at the ureteropelvic junction, and a large calcified mass in the area of the right kidney.

Retrograde pyelograms showed this mass to bear a close relationship to the right kidney pelvis. An aortogram showed an enlarged, tortuous right renal artery with a saccular dilatation which formed the previously seen calcific mass.

Operation revealed an intrarenal arteriovenous aneurysm. This was removed and the patient did well post-operatively.


It is generally accepted that adrenal steroid therapy leads to a greater incidence of gastro-intestinal ulceration than occurs in a patient population not receiving such medication. Ulcers are usually gastric rather than duodenal, although the patients in this series had a 50% incidence of prior duodenal ulcers.
Abstracts

Most patients respond to rigid ulcer treatment; some, even when steroid therapy is continued. Surgical intervention has been necessary in 10% of our series for perforation, severe hemorrhage, when healing is not complete in four to six weeks, or when clinical features of malignancy occur. A three-quarter gastrectomy plus vagotomy has premitted resumption of steroid therapy. A need for steroids pre and post-operatively is highly likely to exist in patients who have been receiving steroid therapy because of adrenal insufficiency due to pituitary suppression.


This discussion, conducted at the annual meeting of the American Geriatrics Society in Chicago on May 4, 1956, considered osteoarthritis, rheumatoid arthritis and gout as they are manifested in patients of the older age groups. Simple measures for the control of symptoms in osteoarthritis, as well as special measures for particular areas of involvement, were reviewed. Distinction between radiologic and clinical diagnosis of hypertrophic arthritis was emphasized. The manifestations of rheumatoid arthritis, particularly in the older patient, and the importance of a comprehensive study as the basis for a sound therapeutic program were considered in some detail. Discussion of therapy centered upon the necessity of treating the patient, since it is still impossible to treat the disease, and upon the subtle dangers of the use of corticosteroids. Diagnosis and treatment of acute gouty arthritis were dealt with briefly. Roles of the internist, the physiatrist and the orthopedist in the management of the several major rheumatic diseases were briefly outlined.


Methods have been described for the estimation of human serum albumin and gamma globulin based on a precipitin reaction using chicken antiserum. The turbidity produced may be measured with either a nephelometer or a spectrophotometer. Chickens have been found to produce a higher titre antiserum than other animals. The results of this method were compared with those obtained by means of paper
Abstracts

electrophoresis. When appropriate antigens are available it should be possible to apply this method to the estimation of other plasma proteins.


Beta-propiolactone is a superior sterilizing agent for biologicals because of its capacity to inactivate rapidly and irreversibly a wide variety of bacteria, fungi, and viruses. At the same time, it causes minimal alteration of proteins, preserving their antigenicity, non-antigenicity or non-toxicity, as the case may be. This compound, therefore, offers a method for production of improved vaccines and a valuable means of sterilizing blood plasma. It is completely hydrolyzed to relatively non-toxic end-products, hydracrylic and beta-chloropropionic acids. All of these characteristics plus its ability to penetrate tissues rapidly make it especially useful in preparation of safer and more homogeneous tissue grafts of arteries, bone and cartilage.


The coexistence of intensive infestation by Schistosoma mansoni and adenocarcinoma of the rectum in a young native of Puerto Rico is described. No claim for causal relationship is made; nevertheless, it is suggested that the link between inflammation and neoplasia, if such a link exists, is in the nature of hyperplastic polypoid granulomas resulting from an undefined stimulus acting in a susceptible tissue.


Clinical clues to the diagnosis of acute pancreatitis are presented together with pitfalls in the interpretation of serum pancreatic enzyme tests.


Pain in the temporomandibular joint may arise from a multiplicity of causes, but tension states superimposed on some occlusal abnormality appear most commonly.

The treatment of these conditions involves the general supportive care of the patient, the elimination or control of tension factors, and the production of a normal
Abstracts

Balanced occlusion. Supportive care includes voluntary limitation of motion, a soft diet, the application of dry heat, and the administration of salicylates in 10 grain doses four times daily. Tension factors may be combated with barbiturates, muscle relaxants, increased out-of-doors exercise, insertion of a bite plane, and in severe cases psychotherapy is useful. Occlusal equilibration is achieved by adequate restorations, the extraction of hopelessly malpositioned teeth and the reduction of premature contacts in occlusion. Temporary symptomatic relief can be often obtained by the injection of hydrocortisone into the joint. In stubbornly refractory cases a high condylcetomy leaving the meniscus, may finally be necessary. This has produced excellent results when all other measures failed.


This report considers 8 patients, observed through 21 pregnancies, in whom an inguinal mass was observed during the period of gestation. The incidence of inguinal protrusions was 1 in 1,021 deliveries during the 10-year period considered.

Three expanding lesions of the inguinal canal observed during pregnancy are compared: incomplete inguinal hernia, fibromyoma of the round ligament, and dilated veins of the inguinal canal and round ligament. All three caused an inguinal swelling simulating an incomplete inguinal hernia.

The significant disparate observations were: (a) incomplete inguinal hernia may suddenly disappear about midpregnancy to reappear after delivery; (b) an inguinal swelling caused from dilated veins is present only during pregnancy and generally appears about midpregnancy; and (c) tumors of the round ligament are never completely reduced, and the precise outline of the border can usually be distinguished.

Treatment, except for tumors, should follow a course of watchful conservatism.

HUMAN MELANOCYTES IN TISSUE CULTURE. FUNAN HU; RENATO J. STARICCO, HERMAN PINKUS, AND ROBERT P. FOSNAUGH, J. Invest. Derm. 28:15, 1957.

Human melanocytes of normal skins and benign pigmented nevi were successfully grown in tissue culture. Three types of cells were observed in cultures of human skin,
Abstracts

epithelial cells, melanocytes and fibrocytes. Dendritic cells giving positive dopa reaction, containing argentaffine granules and presenting other characteristic morphological features and staining reactions were identified as melanocytes. These cells appeared to represent a distinct type.

In corresponding sites, white and pigmented skins have approximately equal numbers of melanocytes per unit area. The pigment cells found in the dark colored skins were larger and more branched than those in the explants of the light colored skins. The dopa positive cells cultured from benign pigmented nevi were found to be even larger than any melanocytes seen in normal skins. There appeared to be a direct relationship between pigment-producing capacity and cellular size and complexity.


For some time it has been known that the oral anticoagulants of the coumarin type reduce plasma levels of Prothrombin and Autoprothrombin I (Factor VII, Stable factor) following administration. Recently a third component Autoprothrombin II (PTC, Christmas factor) has been found to be reduced by these drugs. Prothrombin and Autoprothrombin I, both effect the Quick one-stage prothrombin time which is the test used to follow the effect of the oral anticoagulants on the blood coagulation components. However, changes in the level of Autoprothrombin II do not alter the Quick one-stage so the laboratory test does not usually reflect changes in this activity. An anticoagulant, the effects of which would be easy to control, would be one which only altered factors measured in the routine laboratory test. Since Marcumar does not reduce plasma levels of Autoprothrombin II it appears to be such an anticoagulant.

POTENTIATION BY SQUALENE OF ADRENAL AND THYMIC RESPONSES TO CORTICOTROPIN. I. T. KLINE. Endocrinology. 61:85, 1957.

Squalene, a 30-carbon triterpenoid, unsaturated, straight-chain hydrocarbon is a naturally occurring compound which can serve in vivo and in vitro as a precursor of cholesterol. In hypophysectomized rats, squalene, when injected subcutaneously for seven days (0.2 ml. dialy), augmented adrenal response to ACTH with respect to
both growth and cortical function, the latter having been measured by thymic involution. Simultaneous treatment with a squalene and ACTH resulted in 25% heavier adrenals and 50% smaller thymi than did treatment with ACTH alone, in doses which caused a 13-32% decrease in thymic weight. Squalene alone did not affect adrenal or thymic weights in hypophysectomized, adrenalectomized, or intact rats under the experimental conditions used. Neither mineral oil nor olive oil (used as control substances) augmented adrenal response to ACTH. Orally administered squalene did not potentiate response to ACTH, perhaps because of poor absorption from the intestine or because of hepatic utilization. These experimental data are consistent with the ideas that exogenous squalene can serve in vivo as a readily available, easily utilized precursor of glucocorticoids, presumably by way of cholesterol, that squalene augments ACTH action because the hydrocarbon enters the reaction sequence of adrenal corticoid biogenesis in such a way as to circumvent a rate-limiting step, and that squalene is a natural intermediate in steroid biosynthesis.


Diseases of the hematopoietic system are frequently exhibited in the oral cavity. Since the dentist is often the first to encounter disturbances in this area, it is essential that he be aware of the systemic importance of intra-oral lesions. The mucous membranes of the mouth manifest the early lesions and symptoms of primary hematologic disorders for various reasons. The vascularity of the mouth with the thin barrier of mucous membrane is easily broken by the continuous intra-oral trauma to produce bleeding phenomena in abnormal states. Many blood disturbances result in lowering of the number of leukocytes and inhibition of their normal function. This phenomenon together with the ever present bacterial flora of the oral cavity predisposes to infections and ulcerations.


The fourth report in a series on this important subject is given for 32 additional compounds. In the full series data have been given for 138 steroids.

*Edsel B. Ford Institute for Medical Research.
THE DEVELOPMENT OF NEW SURGICAL PROCEDURES HAS MADE IT POSSIBLE FOR PRESENT-DAY OTOLISTORS TO EXPLORE, DESCRIBE AND CORRECT AN INCREASING NUMBER OF MIDDLE EAR DISORDERS.

For example, we recently encountered an interesting problem consisting of a long-standing, surgically dislocated incus in a boy aged sixteen. Through a trans-tympanic approach to the middle ear the incus was replaced with excellent improvement in hearing. In the stapes mobilization operation otologists throughout the country have been utilizing more frequently the technique of using an automatic hammer on the rigid stapedial footplate. We have found that this results in an acoustic impulse of sufficient intensity to injure the organ of Corti in the basal turn and should, therefore, be used with caution. Another problem recently encountered during a stapes mobilization operation is round window otosclerosis. When the round window is blocked by a mass of otosclerotic bone it is, of course, impossible to expect improvement by stapes mobilization. For chronic bilateral middle ear and mastoid suppuration requiring surgery we have utilized a one-stage, bilateral operation in preference of two separate operations, providing the total operating time is not greater than four or five hours.

A NEW ARTERIAL PROSTHESIS MADE OF HELANCEA NYLON YARN IS DESCRIBED WHICH MORE NEARLY Duplicates the characteristics of the human artery. It is woven, seamless, smooth-walled, soft, and easy to handle and has longitudinal elasticity. Among 23 implants, 7-10 mm. in diameter and 13-15 cm. in length, placed into the thoracoabdominal cavities of dogs as a proximal exclusion of the aorta, there were no failures. Gross and microscopic examination of 14 recovered implants showed excellent arteriogenesis of satisfactory tissue reactivity. Nine dogs with such implants are surviving in good health with angiographically normal prostheses after periods of observation up to 12 months. Although tensile-strength determinations on the implanted specimens reveal a significant and progressive decrease soon after implantation, this loss has not produced demonstrable gross changes in the prostheses. On the grounds of the satisfactory results of these animal experiments, during the past four months we have used the Helancea nylon prosthesis in 10 clinical cases of occlusive arterial disease. Two of these cases were instances of common iliac, and eight were those of femoral, occlusion.
One prosthesis, used as a femoral by-pass in a case of homograft failure, became thrombosed in the immediate postoperative period; the other nine implants have remained open both by clinical signs and by angiography during periods of observation of from two weeks to four months.


Single crystals and particles of colloidal size can be easily carbon-mounted and carbon-replicated. Undissolved, such preparations of particle dispersions preserve the morphology of a complete distribution held rigidly within relatively strong, structureless mounting medium. Selective etching allows identification of the components of mixtures regardless of recognizable geometry. Carbon replicas of single crystals present improved opportunities for obtaining determinative crystallographic data in addition to mere morphology by electron microscopy of a wide selection of substances. Complicated microstructures can be carbon-mounted, and by a process of partial etching and stereoscopy, much can be deduced concerning them. In interpreting the microstructures consideration must be given to the manner in which the carbon deposits and to the effect that particle orientation has upon the electron image intensities.


The magnetic properties of single, monolithic needles and rods of alpha iron are reported. The crystal structure of the rods and of dendrites is discussed and described from electron microscopic and x-ray diffraction studies and a semi-quantitative description given of how the magnetic properties of alpha iron single crystals can be predicted from their size and shape. Two particular conclusions are emphasized, (1) that all of the types of colloidal crystals described are gencrally homologous and (2) that selectivity in the morphology of the crystals, their geometry and anisotropy are directly related to the coercive force.

*Edsel B. Ford Institute for Medical Research.
Abstracts


Strength and density of parts made by powder metallurgy depend largely on the diffusion process. With complete diffusion, a sintered compact would be as free of voids and strong as a solidified melt. It is the relation between volume, surface area and intimacy of contact that influences the extent of diffusion.

With metal powders of the size commonly used, the highest practical compacting pressure and sintering temperatures still leave a large proportion of voids where diffusion has not taken place. But by reducing the size of the particle — particularly when these particles are single, integral crystals — the same conditions produce more complete diffusion and a sintered compact of greater strength and density.

One of the most significant things about these submicron powders is that they have such strong interparticle bond and can be made so fine that sintered compacts have strength and density comparable to solid metal. Particles are as fine as in tobacco smoke — some only 50 atoms across; it would take a billion of them to equal the volume of typical metal-powder particle. In addition, with these submicron particles, diffusion or chemical union can take place between metal and organic materials.

*From Edsel B. Ford Institute for Medical Research.