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


As a result of cooperative effort by the medical and engineering staffs of the Chrysler Corporation and the Henry Ford Hospital a sturdy, dependable food pump has been designed. These pumps have been useful in supplying adequate pressure to force liquified natural foods through small plastic tubes. With these pumps the delivery rate remains constant, regardless of the position of the patient.


The vital reserves of geriatric patients are limited, and as a consequence the nutritional status of the patient is one of the most important factors in determining a favorable outcome of any medical or surgical program of treatment. The restoration and maintenance of nutritional balance in this group of patients is only now beginning to receive the emphasis it deserves. Elderly patients, often with little or no desire to live, present some of the most difficult feeding problems. In these patients, tube feeding with natural foods presents the real advantages of good tolerance, low cost, and greater clinical benefit.


Artificial respiration in newborn infants is still considered necessary despite its potential risk. Wittenberger reviewed the subject and Day demonstrated the relative safety and efficiency of higher pressures in the lung for shorter periods, supporting the feasibility of such treatment. The delicacy, rapidity, and variability of respiratory movements increase the problem of simulating them mechanically. Also, the rapidly changing chemical factors are difficult to anticipate by a rhythmically cycled respirator. With the above in mind, an apparatus was designed which would deliver a positive pressure into a face mask and simultaneously give a negative pressure in a body cuirass placed over the chest and abdomen. A lever moved by the abdomen will "trigger" each inspiratory action of the apparatus to supplement that of the patient. In case of complete apnea, this is done by an attendant. Oxygen may be fed into the face mask. The pressures are regulated within limits of safety and efficiency. Clinical investigation of this model and a larger one for older patients is planned to determine their value.


A clinical and bacteriological study was conducted in 148 out-patients (98% adult females) to compare the effectiveness of two oral preparations, a triple sulfona-
mide mixture and a combination of triple sulfonamides with benzathine penicillin, in uncomplicated acute and chronic infections of the urinary tract. In pre-medication urine specimens, obtained by catheterization, a variety of organisms was found by microscopic examination and culture, with E. coli present in 65%. Medication consisted of an initial dose of 2 gm. followed by 0.5 gm. four times a day for seven days, representing one-half or less of the usual dose of sulfonamides. Seven days after termination of medication, each patient received a routine urological examination, including laboratory studies of the urine. There was no significant difference in effectiveness between the triple sulfonamides and the penicillin-sulfonamide combination, 79% of 71 patients having been freed of urinary tract infection by the former and 75% of 77 patients by the latter, with persistence of infection in the remainder. The former eradicated Proteus vulgaris. The latter was the more effective in preventing growth of organisms not present in pretreatment cultures. Both preparations were active against coccal infections. Sensitivity reactions occurred in 2% but subsided promptly on withdrawal of antibacterial medication and use of supportive measures. There was no evidence of crystalluria, gastrointestinal disturbance, or other serious side effects.


Tissue culture techniques were employed in an investigation of the capacity of various avian tissues to support the growth of the PR-8 strain of influenza A virus. The variables of environmental temperature, chemical composition of the culture medium, innoculation interval, and age of the tissues were studied for their effects on viral replication. Experimental results indicated that these variables appeared to influence the reproduction of the virus only in so far as they were compatible with the life of the host cells in culture. The resistance or susceptibility of host cells to viral infection appeared to be in part a function of the developmental stage of the host cell and in part a function of the type of host cell. Heart tissue from embryos of various ages or from hatched two day chicks were routinely unable to support viral multiplication while chorio-allantoic membrane from embryos of differing ages consistently supported growth of the virus. Other tissues such as skin, muscle, intestine, liver, and lung demonstrated a changing pattern of susceptibility which varies with the age of the tissue. Multiple tissues from hatched two day chicks routinely failed to support viral growth.


The search for a contrast medium for excretory urography, which produces ideal anatomic demonstration and has no hazard to the patient has produced two new preparations, Renografin and Hypaque, both having the same chemical base. This study is based on 900 unselected urograms. The first study consisted of three series of 200 patients each in which the contrast materials, Urokon, Renografin and Hypaque were given and evaluated by physicians who did not know which preparation they
were using. An additional 300 cases were done using Renografin in order to obtain further information about reaction rates, and possibly information about serious reactions. The only serious reaction which occurred in the whole series of 900 patients, followed the injection of Hypaque. The additional 300 cases using Renografin showed a slightly higher reaction rate than the first series. An interesting sidelight was obtained after correlating the ages of the patients with the quality of the pyelogram. The number of excellent quality pyelograms declined sharply at the age of 40 and more sharply after the age of 50. The number of poor pyelograms increases markedly above the age of 60. These figures are valid regardless of the contrast material used.


The increasing incidence of metastatic cancer involving the mandible dictates the need for a greater awareness of this problem and an intelligent survey of modern therapy for its control. The cardinal symptoms are transient discomfort or spontaneous anesthesia of one side of the lower lip. Hormonally dependent tumors may respond to ovariectomy, cortisone therapy or hypophysectomy. Lesions presenting after such therapy may be treated by resection and/or radiation therapy when they are the only evidence of metastatic disease. Resection of the mandible when done must extend above the mandibular foramen and anterior to the mental foramen, since it is safe to assume that the entire contents of the mandibular canal are involved. It is the obligation of the oral surgeon to be aware of the ever present possibility of metastatic disease within the mandible and to cooperate fully in its local control.


Obstetrical rehabilitation by cardiovascular surgery has reopened the question of risk for the pregnant patient with congenital or acquired heart disease. Twenty-two patients subjected to cardiac operations prior to or during pregnancy are reviewed from an obstetrical standpoint. Three patients who had division of patent ductus arteriosus, one during pregnancy, had uneventful term deliveries. The Blalock procedure for tetrology of Fallot was attempted in three patients. In one, the operation was unsuccessful and resulted in two premature deliveries followed by death six month after the second delivery. The second patient had an uneventful term delivery and the third, a spontaneous abortion. Commissurotomies have been performed in sixteen patients. In five patients operated during pregnancy, uneventful gestations and deliveries occurred. In eleven patients operated prior to pregnancy, seven experienced no cardiac degradation during subsequent pregnancy and had four term deliveries, one premature delivery, and two spontaneous abortions, while in the remaining four, two required strict medical regimes throughout pregnancy and two, who had no surgical benefit, were subjected to hysterectomy during the second trimester.
Extraction of rat liver or beef heart mitochondrial acetone powder with alkaline TRIS buffer resulted in complete solubilization of succinic dehydrogenase. By means of this technique the enzyme has been extracted from a variety of animal tissues. Soluble succinic dehydrogenase from *P. vulgaris* has been obtained by sonic oscillation. Cytochrome c and the dyes conventionally used for the assay of mitochondrial preparations of the dehydrogenase do not react with the soluble dehydrogenase, and ferricyanide is a relatively poor acceptor. Phenazine methosulfate is the acceptor of choice with the solube dehydrogenase. An assay method, based on the use of this dye, has been described. Some of the properties of succinic dehydrogenase from *P. vulgaris* have been examined.


The authors report four additional epidermoid cysts of the bones of the fingers. There were 27 previous cases reported, none of which had been diagnosed preoperatively. The earlier cases had partial finger to ray amputations because of unfamiliarity with the nature of the lesion. All the authors' cases were preoperatively diagnosed, permitting the retention of the distal phalanx in three cases and a partial distal phalanx amputation in one. The authors' cases were seen over an eighteen month period leading us to believe the lesion is considerably more common than the paucity of reported cases would indicate.


This is the first published report of the use of aortography for specific preoperative diagnosis in a case of pulmonary sequestration.


A study was made of the effect of restricted lesions of the cochlea on the threshold of the cortical response in cats. Auditory function was determined by recording the thresholds for the "least visible" cortical response at a series of points on the auditory cortex to the onset of pure tone stimuli. A quantitative histological study was made of the pathological changes in the organ of Corti and spiral ganglion by the technique of graphic reconstruction. Findings support previous concepts of an orderly frequency distribution within the cochlea, high frequencies at the basal end and low frequencies at the apex. Whereas, in all previous experiments we found outer hair cells to be the more susceptible to mechanical and thermal injury, there were

*From Edsel B. Ford Institute for Medical Research.*
two animals in this experiment with a selective loss of inner hair cells. It was surprising to us to find the existence of threshold losses in these animals, an observation contradictory to the popular concept that outer hair cells normally are more easily excited than inner hair cells. The findings of this experiment correlate closely with those of the previous studies in which we observed the effect of cochlear lesions on the auditory thresholds as determined by the conditioned response method. In this respect the cortical test appears to be a reliable physiological indicator of auditory function.


An important goal of biliary tract diagnosis is to arrive at an early preclinical diagnosis by conducting certain, sensitive, liver function screening tests and then to institute early therapy, including the removal of etiological factors. The popularity of annual health checks with the public offers a splendid opportunity to study patients before symptoms develop. The value of a therapeutic test in the interpretation of impaired liver function is discussed. The sensitivity, reliability and relative independent effectiveness of the liver function tests in common use are discussed, and those tests indicated for the evaluation of various types of clinical problems are outlined. The limitations of liver function tests are also enumerated. Pitfalls in the differential diagnosis of hepatic and obstructive jaundice are discussed. The value and validity of liver biopsy findings are stressed, and the remote risk and the precautions indicated in conducting this procedure are reviewed. The several indications for performing liver biopsy are enumerated, and the relation of liver biopsy to liver function tests is noted. Diagnostic duodeno-biliary drainage is evaluated and the specific indications for its use are outlined. The incidence and significance of positive microscopic findings are discussed, and the relationship of these findings to cholecystography in the diagnosis of gallstones is appraised. The importance of trained personnel is emphasized.

*HUMIDITY AND TEMPERATURE CONTROL UNIT FOR A COUNTING ROOM. L. E. PREUSS. Nucleonics 14:98, April 1956.

The problem of varying temperature, high humidity and related spurious counting is outlined for the small radioisotope assay area. The inadequacy of the conventional window air conditioner is described and alterations necessary for good temperature and humidity control are detailed for a one ton, two compressor air conditioning unit. Wide range and close control are effected by means of thermostat, humidity sensing device, switching relays, two remote control temperature sensing bulbs and strip heaters.

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An abstract from the J. A. M. A. 160:931, 1956 embodying substantially this same material was published in the Bulletin 4:122, 1956.


Lack of adequate mandibular excursion may be due to foreign bodies which are accidentally introduced into the temporomandibular joint region. Two cases are presented in which the foreign bodies proved to be knife blades. In each case the patient was given emergency treatment in a hospital and in each case the patient's symptoms were delayed, in one case for seven years and in the other case for eight weeks. Treatment, based on roentgenographic findings, consisted of surgical removal of the knives. In the first case, an unusually long period of time had elapsed before the foreign object was removed. In the second case, a speech resembling cleft palate speech resulted from the mechanical resistance to oronasal and oropharyngeal closure. The inability of the patient to open her mouth was also caused by a mechanical obstruction because the knife blade was lodged in the mandibular notch thereby acting as a wedge which interfered with the downward and forward excursion of the mandible.


The diagnosis and management of pulmonary arteriovenous aneurysm are dealt with briefly. Six cases are presented, three patients with the diagnosis established by surgery and three patients with the diagnosis strongly supported by x-ray appearance of the lesion.


Deafness and vertigo are common following head injury. Partial permanent deafness occurs in about 50% of patients who incur a blow to the head severe enough to produce unconsciousness. Even a mild head blow, without loss of consciousness, can occasionally result in deafness. A patient sustaining a high frequency hearing loss may be unaware of the loss particularly when it involves only one ear. In such cases only audiometric testing will reveal the loss. Deafness from blows to the head may be classified into three groups: (A) Longitudinal fracture of the temporal bone, characterized by rupture of the tympanic membrane, bleeding from the ear, and an associated deafness which may be either purely conductive or the combined perceptive-conductive type. (B) Transverse fracture of the temporal bone, in which case the fracture extends through the labyrinth, thereby creating a profound loss of both auditory and vestibular function. (C) Labyrinthine concussion, in which a perceptive type of deafness results with no clinical or roentgenological evidence of temporal bone fracture. To determine the pathology responsible for the perceptive deafness and
vertigo an experiment was performed in which head blows were delivered to ten conditioned cats. Hearing tests and histological studies were made of the brains and inner ears. The hearing losses were identical with those occurring in human patients, their characteristic feature being a maximum loss at the 4000 cps frequency. Histological examination revealed damage to the organ of Corti, most severe in the upper basal turn. These changes were identical with those produced experimentally by air-borne blast and noises of high intensity. The characteristic dizziness following a head blow is of postural type and may persist for several months following head blow. It may occur independently of deafness. The underlying pathological change responsible for the postural vertigo is thought to be injury to the utricle or saccule. These structures which are sensitive to linear acceleration and deceleration are injured by the intense stimulation of the head blow. One experimental animal incurred a rupture of the membranous walls of the utricle and saccule and degenerative changes in the macula of the saccule. We believe, therefore, that deafness and vertigo following head blows are due, for the most part, to injury of the membranous labyrinth.


The paper contains the first published electron micrographs of replicas of urolith structures. Kidney stones are difficult to replicate because they are often soft or porous, or are so insoluble in usual solvents that ordinary replicating methods are impossible. The carbon replica technique was used successfully to replicate the cystine urolith. The preparation of the replicas and some of the criteria for interpreting the micrographs are described. Electron micrographs are shown of the cystine tablets parallel and perpendicular to the (0001) planes and at intermediate angles. The compact layered nature of the stone is clearly seen. It is concluded that the carbon replica method can be used productively in the study of uroliths. It is shown that, where a cystine stone is opaque to X-rays and hard, these properties are due to efficient packing of cystine tablets into the macroscopic stone. The structure was uniform and no unique core structure was observed. There was no visible evidence of colloid, the stone apparently being a result of crystal formation from solution. In stones of other genesis it might be that colloidal structures, unique core formations, and structure in layered areas would be observable.

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