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Publications of the Staff

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Titles and Selected Abstracts

Edited by G. B. Bluhm, M.D.

Internal sample introduction system for a flow gas proportional counter. C. K. Bugenis, C. A. Artman and L. E. Preuss. *Nuclear Instruments and Methods* 93:525-7, 1971.

A device for introducing samples into the interior of a flow-gas proportional counter for soft x-ray spectrometry is described. It functions as a gate operated air lock, minimizing contamination of the P-10 gas. The absence of an entrance window and the exterior air path reduces low energy photon attenuation associated with these barriers. A plane sample geometry held tangential to the inner cathode surface minimizes field distortion. The use of low Z materials throughout reduces fluorescence effects. Several spectra are included to demonstrate the increased efficiency of detection obtained in the internal mode (greater than 100 times as efficient as the external mode).

The prevalence of halo volumes in familial vitamin D-resistant rickets. R. O. Buss and H. M. Frost. *Calcif Tissue Res*, 7:76-80, 1971.

It has been known since 1958 or before that in familial vitamin D-resistant rickets, a considerable fraction of the osteocyte lacunae of the bone from affected individuals displays inadequate mineralization. The constant association of this phenomenon with an osteocyte suggests that the latter plays a causal role in it. This study evaluated by statistical means the possibilities that the phenomenon represented a permanent defect in the bone matrix, or a delay in mineralization which otherwise could reach normal levels, or an active demineralization occasioned somehow by the osteocyte at some time after proper mineralization had occurred. The second hypothesis proved the only tenable one in view of the available evidence.

Placental localization. A comparative evaluation of isotopic placentography and amniography. B. H. Drukker, W. A. Reynolds, E. Ortiz, and J. C. Josey. *Am J Obstet Gynecol*, 110:9-14, May 1971.

Both RISA placentography and amniography were done for placental localization in an unselected series of 28 patients with third-trimester vaginal bleeding. Radiation to the fetus in isotopic placentography is considerably less than that required for placental localization by amniography. In addition, results indicate that isotopic placentography is more accurate, simpler and avoids the potential hazards of amniocentesis. We believe that isotopic placentography is preferable for placental localization and that amniography should be used only when isotopic placentography is not available or inconclusive.

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Application of the oxygen factor to clinical radiotherapy. L. A. DuSault. *Radiology*, 100:675-8, Sep 1971.

The oxygen-enhancing effects of air and carbogen atmospheres on tumor irradiation in mice are compared. Results indicate that the therapeutic effects are greatest in carbogen at one atmosphere, using large fractions and a long overall treatment time. The experimental data are discussed in relation to the clinical situation.

Sarcoidosis of the heart presenting with ventricular tachycardia and atrioventricular block. W. F. C. Duvernoy and R. Garcia. *Am J Cardiol*, 28:348-52, Sep 1971.

Direct involvement of the myocardium, a serious complication of sarcoidosis, was observed in two cases. The first patient had a progressively downhill course over 2½ years, ending in sudden death. Her disease was characterized by recurrent ventricular arrhythmias, progressive heart failure and terminal arrhythmia. Cardiac catheterization and cineangiograms performed before death revealed two ventricular aneurysms. Postmortem examination revealed extensive fibrosis and typical noncaseating granulomatous infiltration of the myocardium. The second patient presented with complete heart block. At the time of implantation of an epicardial pacemaker, biopsy of the myocardium and a mediastinal lymph node showed the noncaseating granulomas of sarcoidosis. In the subsequent years, atrioventricular (A-V) conduction improved and, when last seen, the patient maintained a normal sinus rhythm with first degree atrioventricular block.

Surgical treatment of spastic equinus in cerebral palsy. H. M. Frost. *Arch Phys Med Rehabil*, 52:270-5, Jun 1971.

Over 2½ decades of clinical experience, the author has come to treat the problem of spastic ankle equinus as it occurs in children with cerebral palsy primarily and exclusively by heel cord lengthening. Since in effect (if not in literal fact) the bones in such children appear to grow faster than the spastic triceps surae, recurrence of the spastic equinus in rapidly growing children occurs in approximately one-third of the affected patients and is treated by repeating the heel cord lengthening. Employing this approach has made it unnecessary to use special shoe corrections, braces, night splints and stretching programs to manage this problem. Once adult skeletal stature has been achieved, the problem of recurrence of the spastic equinus appears to disappear.

Malignant potential of polypoid lesions of the colon and rectum. R. C. Horn, Jr. *Cancer*, 28:146-52, Jul 1971.

Sixty percent of 2,093 polypoid lesions of the colon and rectum, studied in the Department of Pathology of Henry Ford Hospital over a recent 5-year period, were diagnosed as adenomatous polyps. Twenty-seven percent were considered non-neoplastic—hyperplastic, mucosal, and inflammatory polyps. Little evidence can be found to support a contention that any of these lesions predispose to the development of cancer. Origin of carcinoma in such polyps is believed to be a rare event. The papillary or villous adenoma, on the other hand, is considered a potentially serious lesion. The incidence of progression to frank cancer is not great. In this study, only five of 91 papillary adenomas contained foci of invasive cancer. Additionally, even when they do not, there is a risk of local recurrence unless complete removal is accomplished. It appears that most carcinomas are carcinomas from their inception.

Relationship of hyperparathyroidism to multiple endocrine adenomatosis. C. E. Jackson and B. Frame. The National Foundation: *The Endocrine System*, Birth Defects, Original Article Series, 7:66-8, May 1971.

An experience with 8 families with 56 members affected with hyperparathyroidism has emphasized that heredity is an important etiologic factor in this disease. The finding of other

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endocrine involvement in several members of these families has suggested that hereditary hyperparathyroidism is only a part of the autosomal dominantly inherited multiple endocrine adenomatosis syndrome. This association with hyperparathyroidism, a disease being found with increasing frequency as an inherited condition, provides evidence that multiple endocrine adenomatosis is more common than previously suspected.

Adrenalcorticosteroid and salicylate actions on human and canine haversian bone formation and resorption. S. Jett, K. Wu, H. Duncan and H. M. Frost. *Clin Orthop*, 68:301-15, Jan-Feb 1970.

By means of *in vivo* tetracycline bone labeling and serial rib biopsies, haversian bone resorption and formation rates were found to be significantly decreased in ribs of a woman with naturally-occurring Cushing's syndrome and in ribs of dogs treated with Dexamethasone for three months. This was due primarily to decreased creation of new resorption and formation centers. Dogs treated with salicylates for three months showed, on serial rib biopsy, a decreased thickness of new haversian bone deposited in unit time, but a compensating increase in the number of bone-forming centers such that the bone formed in 1 mm³ compacta remained unchanged. After three months of recovery, the altered activity had returned to normal.

Cholangiocarcinoma. J. Kaude and R. Rian, *Radiology*, 100:573-80, Sep 1971.

The angiographic, historical, and clinical findings in 16 cases of primary bile duct carcinoma (cholangiocarcinoma) are described. The differential diagnosis of hepatoma, inflammatory biliary disease, and metastatic disease to the porta hepatis is discussed. The typical findings of cholangiocarcinoma occur in the liver hilus and include tiny, thin, neoplastic vessels with irregular encased or obstructed arteries. The portal vein is seldom invaded. An early diagnosis of cholangiocarcinoma remains difficult, but angiography may be diagnostically more conclusive than needle or open liver biopsy.

Pituitary function in the deprivation syndrome. I. Krieger and R. C. Mellinger. *Pediatrics*, 79:216-25, Aug 1971.

Fasting serum growth hormone values of infants and some children with the deprivation syndrome were increased, providing tests were done before unrestricted feeding. Pituitary growth and adrenocorticotrophic hormone release were unresponsive to hypoglycemia only in children (5/7); however, some (3/5) had normal or increased serum growth hormone values on admission, and all had normal metyrapone tests. One severely emaciated child probably had deficient growth hormone and thyroid function. Control infants with growth failure due to undernutrition with an organic basis had elevated fasting serum growth hormone values. Insensitivity to hypoglycemia was not related to the severity of the linear growth failure and probably does not reflect growth hormone deficiency at the target organ.

Problem of femoral hernia. J. L. Ponka and B. E. Brush. *Arch Surg* 102:417-23, Apr 1971.

Femoral hernias occurred in 216 patients in a period of six years, with an overall recurrence rate of 6.5%. The McVay repair, used in cases of strangulation, incarceration, and recurrence, and in many routine cases, was performed upon 101 patients; the McVay Moschowitz repair was performed upon 23 patients. There were nine recurrences (7.3%) after these two operations. The Moschowitz repair was performed 46 times with four recurrences (9%). The Bassini operation or lower approach was utilized 44 times in uncomplicated cases, with a recurrence in only one patient (2.3%). The authors feel that the McVay repair has given the best overall results. The Bassini repair is recommended in selected cases.

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Structural aspects of megakaryocytic function and lymphocyte relationships. J. W. Rebuck, J. P. Agraaham and M. Short. In *Formation and Destruction of Blood Cells*, T. J. Greenwalt and G. A. Jamieson, eds. Philadelphia, J. B. Lippincott, 1970.

This paper includes a brief review of the history and pathophysiology of immunologic thrombocytopenia, including the evidence of an immunologic mechanism and the morphologic correlations in the megakaryocytes (loss of platelet formation, reduction in cytoplasmic granules, coarsening of nuclear chromatin). The evidence for the presence of antibody and its direct attack on the marrow megakaryocytes is also reviewed. Two cases of thrombocytopenia secondary to lymphoproliferative disorders are discussed. Among the unique features of the marrow aspirate of these thrombocytopenic patients was the preservation of megakaryocytes in high normal numbers despite some lymphocytic invasion of the marrow. There were characteristic qualitative changes in the megakaryocytic system as seen in I.T.P. It was also noted that megakaryocytes were often surrounded by lymphocytes (peripolesis) and penetrated by uropods from the adjacent lymphocytes which resulted in intracytoplasmic lymphocytes (emperipolesis). This finding of lymphocytes within megakaryocytes was confirmed in sections. It seems likely that the presence of the lymphocytes in close proximity to or within the megakaryocytes is directly or indirectly damaging to the megakaryocyte and to platelet formation. This, in turn, suggests a cellular mediator as well as the established humoral component of I.T.P.

Immunosuppression in man in immunopathology of inflammation. J. W. Rebuck, D. A. LeSher, M. J. Perkins and F. Leal. *Excerpta Medica*, B. Forsher and J. Houck, eds. Amsterdam, International Congress Series No. 229, 1971.

Monocytes and neutrophils from the blood as well as local macrophages are the initial response in man to trauma or to an antigen lacking a specific antibody. At 9 and 12 hours of inflammation the response is reinforced by equal numbers of lymphocytes which rapidly transform to macrophages at 14 and 16 hours. For safe and effective monitoring of immunosuppression in organ transplant patients, it is imperative to distinguish the immunologically neutral monocytes from the immunologically competent lymphocytes as the source of effector macrophages. Prior to transplantation and immunosuppression, a test skin window on prospective kidney recipients enables them to serve as their own controls. In the uremic patient this baseline response shows some qualitative diminution of lymphocyte response. In successful immunosuppression the lymphocyte migration is almost completely deleted; however, effective although diminished monocyte and neutrophilic migrations continue to provide successful defense against infection. Serious impairment of residual host defense occurs with over-suppression of the monocytes and neutrophilic migrations while hypersensitivity or restoration of cell-mediated immunologic mechanism is indicated by increased basophilic or lymphocytic responses.

Tetracycline-based study of bone dynamics in pycnodysostosis. P. Sarnsethsiri, O. K. Hitt, E. J. Eyring and H. M. Frost. *Clin Orthop* 74:301-12, Jan 1971.

Utilizing tetracycline label, the bone dynamics of a patient with pycnodysostosis revealed decreased bone turnover at both the tissue and cellular levels and in both the haversian remodelling and on the walls of the marrow cavity. The changes on the latter were of greater magnitude than in the former, as demonstrated by biopsy of the rib. The stenotic marrow cavity detected on roentgenograms in this disease was also present in this patient.

Mediastinal lipomatosis complicating steroid therapy of regional enteritis. Bernard M. Schuman. *Gastroenterology*, 61:244-6, 1971.

Mediastinal lipomatosis developed in a patient with regional enteritis on long-term corticosteroid. Numerous complications resulting from corticosteroid therapy of gastroentero-

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logic patients have been catalogued. Mediastinal lipomatosis has not been mentioned in these reports although it has occurred in other types of patients who have been maintained on high-dose corticosteroid therapy of variable duration. Patients who have had renal transplantation, those afflicted with a dyscollagenosis and chronic asthmatics, all requiring large amounts of corticoids for control, are the kinds of patients who have developed the fibro-fatty tumors of the mediastinum. It might be assumed that this complication would not occur in the gastroenterologic patient who usually is treated with small daily doses of a cortisone derivative. This case is of interest because mediastinal lipomatosis developed in a regional enteritis patient who had received dexamethasone for almost four years, usually at a daily dose of 0.75 mg (5 mg prednisone equivalence).

Polyarthrititis in obese patients with intestinal bypass. J. W. Shagrin, B. Frame, and H. Duncan. *Ann Intern Med*, 75:377-80, Sep 1971.

Seven of 31 patients undergoing small bowel shunt surgery for obesity developed articular symptoms (23%). All affected patients had a jejunocolostomy instead of a jejunostomy. Most of the articular manifestations were transient, lasting only two months, but in two patients they were severe and lasted over 24 months. In one patient, because of the severe articular symptoms, reconstitution of the bowel to the normal anatomical sequence was performed. She immediately had complete relief and resolution of joint symptoms. Apparently the abnormal position of the bowel in some way promoted the development of arthritis in this patient. Intestinal bypass may lead to an arthropathy similar to the more classical enteroarthropathies, and this possibility must be considered when evaluating the total morbidity of the surgical shunt procedure for obesity.

Correlation of serum alkaline phosphatase with bone formation rates. L. Z. Shifrin. *Clin Orthop*, 70:212-15, May-Jun 1970.

An attempt was made to correlate Bodansky serum alkaline phosphatase values with tetracycline-based measurements of bone formation rates in rib biopsies of 70 patients with a wide variety of illnesses. Elevated serum alkaline phosphatase values did not correlate with elevation of the bone formation rate as measured by tetracycline labeling. There were no consistent changes in the phosphatase in any disease studied. It was proposed that elevated Bodansky serum alkaline phosphatase values indicate woven bone formation, not increased lamellar bone formation.

Hypersensitivity pneumonitis related to a home furnace humidifier. L. A. Sweet, J. A. Anderson, Q. C. Callies and E. O. Coates, Jr. *J Allergy*, 48:171-8, Sep 1971.

A thermophilic actinomycete was isolated from the home furnace humidifier of a patient with biopsy-proved interstitial granulomatous pneumonitis. Extracts of this organism produced a positive Arthus-like reaction and a positive inhalation challenge in the patient and gave a weak precipitin line in agar gel diffusion against the serum. Subsequent operation of the furnace in the patient's home regularly induced symptoms before but not after removal of the humidifier. This common household appliance may increasingly be a source of exposure to thermophilic actinomycetes.

