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The broad clinical ramifications, recognized in recent years, continue to make hyperparathyroidism a diagnostic and technical challenge. The use of routine or automated analysis for levels of serum calcium and the realization that primary hyperparathyroidism produces a variety of manifestations have resulted in an increased recognition of this entity. During the past several years, in nearly 50% of the patients seen at Henry Ford Hospital, the diagnosis has been established on the basis of manifestations other than, and in the absence of, renal lithiasis and cystic bone disease. Although the diagnosis of primary hyperparathyroidism is frequently established for patients of advanced age, operative correction is usually advisable if the patient has a life expectancy of more than a few years. Newer techniques for identification of parathyroid tumors can be expected to facilitate operative correction of this disease. The appreciation of involvement of multiple parathyroids, in a significant number of patients having primary hyperparathyroidism, and the efficacy of operation for a few patients (with problems related to tertiary hyperparathyroidism) have produced in recent years additional challenges for the surgeon.


The Atomic Energy Commission's restriction of \(^{89}\text{Sr}\) in bone scanning to patients with known malignancy led to the investigation of \(^{99m}\text{Tc}\) sulfide colloid for bone scans in 25 patients. The uptake of \(^{89}\text{Sr}\) is a function of turnover of cations in the mineralized structure and lesions are seen as areas of increased activity. In contrast, the colloid is localized in the reticuloendothelial system of the bone marrow and lesions are seen as areas of low activity in the displayed bone. The advantages of this material over \(^{89}\text{Sr}\) are: its shorter half-life permits the use of a larger dose with greater statistical accuracy on the scan and with a lower radiation dose to the patient; depiction of normal bone aids in precise localization of the lesion; the scan can be performed 4 hours after injection instead of 48 to 72 as with \(^{89}\text{Sr}\); there is no interference by activity in the bowel as with \(^{89}\text{Sr}\); and, lesions can be detected earlier since they start in the bone marrow. However, since it is concentrated by the liver and spleen, the spine in this area may be obscured.


Metabolic bone disease is a relatively frequent cause of pain in the neck and back and may result in spinal cord and nerve root pressure simulating a primary neurologic disorder. The cause of such pain is probably due to pressure of the diseased and compressed bone on spinal nerve roots or upon sensory fibers in the periosteum and along vascular channels in
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adjacent bone. Each patient with unexplained spinal pain should have appropriate roentgenologic and metabolic studies to evaluate the possibility of metabolic bone disease. A summary is presented of recent concepts in the diagnosis and therapy of osteoporosis, osteomalacia and the skeletal effects of hyperparathyroidism.


The diagnosis of hyperparathyroidism is a continuing challenge, even when the serum calcium levels are obviously elevated. Detection of parathyroid hyperfunction in the presence of normal serum calcium levels promises to be an even greater challenge in the future. A 62-year-old woman with a 10-year history of repeated pathologic fractures was found at autopsy to have a parathyroid adenoma and osteitis fibrosa. Unusual features were normocalcemia and a marked elevation of the plasma alkaline phosphatase to 80 Bodansky units. Recently there has been increased emphasis on the occurrence of normocalcemia in patients with primary hyperparathyroidism. The great majority of such patients have exhibited renal calculi as the major feature of their parathyroid hyperfunction. The current case illustrates that osteitis fibrosa without renal calculi also occurs in normocalcemic hyperparathyroidism.


The etiology, clinical manifestations and treatment of osteitis fibrosa due to hyperparathyroidism are reviewed. A variety of hyperfunctioning parathyroid states may lead to osteitis fibrosa. The disease may be relatively asymptomatic or may lead to incapacitating skeletal complaints. The biochemical and radiologic manifestations may be misleading, especially when complications of renal failure ensue. Adequate treatment consists of removal of all hyperfunctioning parathyroid tissue, whether this is a single adenoma or general hyperplasia. If osteitis fibrosa is present, significant hypocalcemia and hypomagnesemia may be present after successful parathyroid surgery.


Fifty-four persons with tumors of minor salivary gland origin are surveyed. These patients were examined at Henry Ford Hospital between 1959 and 1968. The tumors originated in the palate, lips, mucous membrane of the oral cavity, tonsil, tongue and nasopharynx. The palate was the most common site of origin. An otherwise asymptomatic mass was the usual presenting complaint although pain and ulceration are characteristic of malignant tumors. There were 43 malignant or potentially malignant lesions: 27 adenoid cystic, 15 mucoepidermoid and 1 malignant mixed tumor. The aggressive character of the adenoid cystic carcinoma is disguised by the tendency of the tumor to recur locally months or years after apparently adequate surgical excision. Mucoepidermoid tumors present a variety of clinical behavioral patterns from entirely benign to very aggressive. Eleven patients with benign tumors are included in this study. Benign tumors are treated by excision. These do not recur if the excision has been total. Malignant tumors are excised with an adequate margin of normal tissue. The tendency of malignant salivary gland tumors, especially the adenoid cystic carcinoma, to recur locally dictates that the excision be radical. Resulting defects can be managed with prostheses or local flaps. Neck dissection is reserved for patients with clinical evidence of metastases to cervical nodes. Radiation is used primarily as an adjunct to surgical therapy.

**Contributions of the Xg* blood group system to medicine.** C. E. Jackson and J. D. Mann. *J Indiana Med Ass* 63:432-5, May 1970.

The contributions to medicine which have followed the discovery in 1962 of the sex-linked blood group, Xg*, are briefly reviewed. The medical-legal applications are mentioned. The use of this system in mapping genes on the human X chromosome is explained and the potential
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importance of these studies emphasized. The contributions of Xga to certain problems of sex chromosome abnormalities are discussed. Data are presented on the possible interaction of the Xga blood group system and the male:female ratio at birth.


The development of pancytopenia following viral hepatitis, though rare, has been well documented. The pathogenesis is speculative; it has been thought to be due to the direct cytotoxic effect of the virus or perhaps due to the stimulation of antibodies which have an affinity for marrow byproducts of liver destruction, or failure of the liver to detoxify a marrow suppressant. The case discussed was unique in that the hepatitis was not viral in origin but appeared to be due to hypersensitivity reaction to Halothane. Further, the marrow injury that resulted involved the erythroid series selectively and did not progress to pancytopenia. Finally, the disorder was not fatal as is frequently the case but remitted spontaneously within two weeks.


Gunshot wounds of the thoracic aorta are usually fatal. However, in the case reported here, the course of the missile was such that the patient survived but was left with a fistula between the aorta and pulmonary artery, and the pellet was ultimately found to have embolized to the right femoral artery. Nine months after the injury, the aorticopulmonary fistula was closed through an incision in the pulmonary artery, with the aid of the pump-oxygenator. This is the thirtieth case of peripheral embolism of a missile after perforation of the heart or aorta, and the second case of aorticopulmonary fistula produced by gunshot injury. It is the first report of a case presenting both bullet embolism and aorticopulmonary fistula.


There are few clinical situations which require the replacement of the pulmonary artery or one of its branches by graft of tissue or prosthetic material. Aortic homografts have been used successfully to provide passage of blood from the right ventricle to the lungs in the congenital anomaly of truncus arteriosus. A Dacron graft was used once by Schumacker and his associates to correct anomalous origin of the right pulmonary artery from the aorta. We have not seen in the literature an example of the use of a graft for the preservation of lung tissue, hence this case report. The patient was a 71-year-old woman who had had a right middle lobectomy for stenosing bronchitis. A similar lesion developed in the upper lobe of the left lung, and lobectomy was planned. Dislocation of the apex of the lung resulted in disruption of the main pulmonary artery. Intrap ericardial control of the artery was obtained and the lobectomy was completed. The pulmonary artery from the pericardium to the separate branches to the lower lobe was worthless. It was evidently desirable to preserve the lower lobe, not only for its pulmonary function, but as a space filler to prevent overdistention of the remaining two lobes on the right. Circulation to the lobe was adequately restored by inserting a 10 mm Dacron graft between the end of the main pulmonary artery and the inferior arterial branch to the lower lobe. Angiograms showed good function of the graft.


Orthodontic surgery entails the operative correction of developmental and post-traumatic maxillo-mandibular functional and esthetic disharmonies. The chief objective of this surgery is the betterment of masticatory and speech function, but in many cases the improvement in facial esthetics is almost as important. Surgical improvement is directed toward re-positioning
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the basal/alveolar bone; this is in contrast to conventional orthodontic treatment which emphasizes individual dental and to some degree alveolar bone movement. These two approaches complement one another, though surgical management is reserved chiefly for adult patients in whom facial growth has ceased. Proper diagnosis in those candidates for orthodontic surgery rests chiefly upon three modalities: the clinical evaluation of the occlusion, jaw function and morphology, and appearance; the evaluation of models of the patient's teeth; and cephalometric analysis. This article emphasizes the interplay of all three evaluations, but discusses in particular detail the significance of cephalometry. Particular differences in normal cephalometric values between American Caucasian and Negro patients are presented for the first time in the surgical literature, and a new, simplified cephalometric analysis for use by the clinician is described.


Eleven patients (six women and five men) with Trichophyton rubrum granuloma were studied. The predisposing factors, the pathogenesis, the mycological aspects, and the pathology are discussed. It is emphasized that T. rubrum is a virulent dermatophyte which has the capacity to invade the skin through hair follicles, thus offsetting a granulomatous tissue reaction which may extend down to the subcutis. Contrary to previous reports, this condition is not confined to women who shave their legs, although such practice is a definite etiologic factor. Furthermore, other areas of the body may be affected.


A distinctive albinism phenotype has been observed in 10 members of an Amish isolate in Southern Indiana. Affected subjects show profound generalized albinism at birth but rapidly develop normal skin pigmentation and yellow hair, although persistent ocular albinism and nystagmus permit accurate diagnosis in the adult. No conclusive evidence for close linkage to any of 15 polymorphic loci was found. Whether the syndrome results from a different allele at the recognized albino loci or from a mutation at a separate site is not yet known.


From 1963 to 1967, 483 patients were seen with diverticular disease. Of these, 50 patients or approximately 10% required prompt operation. Indications for emergency operation include: acute diverticulitis with perforation followed by peritonitis, abscess, peri-diverticulitis, obstruction, fistula formation, bleeding and diverticulitis of the right colon, cecal diverticulitis, or diverticulitis of the colon, frequently mistaken for appendicitis. In elder, poor risk patients, the three stage procedure was preferred in 26 of 42 patients with diverticular disease of the sigmoid. Less commonly employed procedures included the second stage and first stage resections. The best results were obtained when the sigmoid colon could be resected in one stage. Post-operative complications occurred in 18 of 50 patients and included wound infections, genitourinary infections, sigmoid cutaneous fistula, wound dehiscence, incisional hernia, pneumonitis, and phlebothrombosis. There were four deaths among the 50 patients who required urgent operations. One died of a cerebrovascular accident, one of aspiration pneumonitis, and two of complications related more directly to the operative procedure.


From an Amish population with 10.6% incidence of Cw antigen, a pedigree for 497 selected members has allowed postulation of a CwDe chromosome combination. The combination could be traced through these families without evident crossover in the Rh-Hr system. Random distribution of CwDe in respect to autosomal recessive limb-girdle muscular dystrophy in three families precludes close linkage of genes for Rh and this form of dystrophy.
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Dosage response has been shown for genotypically-verified CwC, Cwc, and CwCw cells vs anti-CCw and anti-Cw serums.


A clinicopathologic review covering a 15-year period (1953-1968) presents all 65 cases of primary malignant tumors of the small intestine occurring in 62 patients. Little has been written about these rare tumors which occur annually at a rate of less than one per million of population. Ages ranged from 25-80 with the highest incidence in the 50-70-year-old group and the ratio of male predominance was approximately 2:1. Presenting symptoms were varied but usually related to the gastrointestinal tract. Only seven of the 62 patients were asymptomatic. The five-year survival rate correlated well with extent of disease at diagnosis, 50% for local disease, 23% when disease also involved regional nodes; no patient survived five years when distant metastases were present at diagnosis. The diagnosis was made preoperatively or suspected in 52%, and made incidentally at surgery or at autopsy in 48%. Excisional surgery was attempted in 50%. Thirteen of this group of 31 patients had recurrences. Palliative therapy of surgery, radiotherapy, and/or chemotherapy relieved symptoms but did not increase survival. Adenocarcinoma was the most common histologic type, was found predominantly in the duodenum, and survival was less favorable than for other regions of the small bowel. Patients with lymphomas had the best five-year survival rate. Patients with malignancies of the ileum had a slightly better five-year survival incidence than did those with malignancies of other anatomic sites, generally because of the increased incidence of lymphomas in this area. Carcinoid tumors, leiomyosarcomas, and melanomas were the other histologic types observed. Of the 62 patients, 15 are alive without disease, six are alive but with evidence of disease; 38 died of their disease and three died of other causes.


This is the fifteenth documented report of adenocarcinoma of the small bowel complicating regional enteritis. In only one other case did the carcinoma arise in an excluded loop. All patients had had regional enteritis for many years before the tumor developed. The association of small bowel cancer, an uncommon neoplasm, with regional enteritis, a relatively infrequent disease, does not seem merely coincidental. With new reports of malignant degeneration of chronically inflamed bowel appearing in the literature, by-pass operation, with or without exclusion from the fecal stream, should be avoided in the surgical management of regional enteritis.


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 elevations of the bone formation rate as measured by tetracycline labeling. There were no consistent changes in the phosphatase in any disease studied. It is proposed that elevated Bodansky serum alkaline phosphatase values indicate woven bone formation, not increased lamellar bone formation.


Occasional instances have been observed of impaired myocardial and cerebral function following surgery on the left side of the heart. These could best be explained as air embolism despite the use of induced electrical fibrillation, aortic and ventricular vents, and induced
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mitral incompetence. Embolization of trapped air from the left heart chambers, after concluding bypass, is considered a frequent mechanism and one which escapes the usual preventive measures. A series of experiments demonstrated that these measures permitted air to remain in the left heart after bypass. In another series, air-fluid levels were demonstrated radiographically to remain for in excess of one hour after injection of air into the beating left ventricle. The air remained in this location rather than in the ascending aorta. Angiographic studies in two patients with mitral valve disease confirmed the experimental finding that the ventricular apex lies above the level of the ascending aorta. To prevent air trapping, a multiple aspiration procedure was developed consisting of needle aspiration of the superior pulmonary veins, atrial appendage, ventricular apex, and ascending aorta. Aspirations should be made while the heart is fibrillating.


Forty-seven patients with metastatic breast cancer were treated randomly with either 100 mg of $\Delta^1$-Testololactone three times weekly or with 2 ml three times weekly of an estrogen-progestin combination containing 5 mg of estradiol valerate and 250 mg of hydroxyprogesterone caproate in sesame oil (NSC-77622). Both regimens had been reported to have produced regressions in metastatic breast cancer. The study could not be double-blind because of the physical differences of the two agents, one an oily solution and the other an aqueous suspension. Two patients responded to $\Delta^1$-Testololactone; one patient was less than one year postmenopausal, the other was 10+ years postmenopausal. Only one patient, eight years postmenopausal, responded to NSC-77622. About two-thirds of the patients studied had dominant visceral metastases, a group which responds poorly to any systemic therapy. Responses were of relatively short duration—60 and 111 days for $\Delta^1$-Testololactone and six months for NSC-77622. Survival, from the beginning of the initial study to death, in the 24 patients treated with $\Delta^1$-Testololactone and the 23 patients who received NSC-77622 was essentially identical and not significantly different from other similar groups of 20-24 patients studied at Henry Ford Hospital. It is not possible to state with complete confidence that either of the agents is ineffective, but it is safe to assume that they are no better than other available agents.


Due to the paucity of behavioral data bearing on the possible role of the efferent auditory system, an investigation of some possible functions of the crossed olivocochlear bundle (OCB) has been undertaken, using cats. Behavioral correlates of transection of the crossed OCB were sought in such measures as absolute thresholds in quiet, effective masking over differing noise levels and frequencies, and temporary threshold shifts. The following results were obtained after transection of crossed OCB: (1) Absolute thresholds were unchanged; (2) amount of masking at 1000 Hz and 2000 Hz increased (though the shift was not statistically significant with the small number of subjects tested); and (3) TTS did not differ greatly for the transected animals.