
A common feature among various types of inflammation is the accumulation of protein at or near the site of injury. Local conditions frequently favor denaturation, heat aggregation, or overt fibrin formation. These altered proteins must ultimately be digested or removed for the completion of healing. Joint exudates from patients afflicted with various types of arthritis served as a source of inflammatory fluids for this study. To mimic the circumstances that might be encountered in the body when proteases exercise their capabilities extracellularly, natural proteins (albumin, fibrinogen, fibrin and gamma globulin) were used as substrates for proteolysis. Several established methods to determine protease activity in the biological specimens were used and a new plate method was developed for proteolysis in agar-supported substrates which provided a continuing time study of desired sensitivity. Inflammatory fluids from joint disease had measurable amounts of acid protease and alkaline protease activity which could be ascribed to the enzymes cathepsin and fibrinolysin, respectively. The proteolytic magnitude seemed more related to the degree of inflammation than to specific types of joint disease. Albumin, fibrinogen and fibrin were digested to some extent by the accumulated cathepsin and fibrinolysin. Gamma globulin was most resistant to proteolysis. Three major sources for the proteases described at the inflammatory site are transudated plasma, exudative leucocytes and synovial lining cells and/or other types of cells at the site of inflammation. Fibrin deposits encourage the continued entrance and persistence of neutrophils at the inflammatory site to sustain the acute phase of inflammation. In the present study, human blood neutrophils exhibited albuminolytic cathepsin D activity.


A patient with chronic atopic dermatitis would slap her face rather than scratch it. The repeated impact of the wrists against one another produced fibrotic nodules on them.


The sodium urate crystal is considered diagnostic for gouty arthritis. Careful evaluation of synovial fluid by polarizing microscopy enhances the discovery and recognition of these crystals which are found in most attacks of arthritis due to gout. The role of uric acid and urate crystals in the pathogenesis of gout is reviewed. Historically in the last decade, emphasis has been placed on the central role of the urate crystal to initiate the inflammation of gout. The mode of crystal formation was related to the extracellular uric acid concentration and pH change affecting solubility of urate. Spontaneous extracellular crystallization was accepted as the origin of the urate crystal. Recent studies reintroduced Mordhorst's concept that there is a non-crystalline urate which accumulates to induce leukocytic emigration and incite the inflammation. Electron microscopy study of exudative synovial leucocytes from patients with acute gout suggests that the first urate crystal forms within neutrophils. This is because the crystals were in direct contact with the cytoplasm and not bounded by a membrane-lined vacuole such as would be expected if the crystal was formed extracellularly and subsequently phagocytized. Extrusion of urate crystals formed intracellularly could "seed" uric-acid-rich synovial fluid and induce extracellular deposition of typical urate crystals.

One hundred thirty-five women over 50 years of age were evaluated for levels of skeletal density. A sternal marrow aspiration was performed and marrow particles were separated and stained for mast cells. The number of mast cells in each marrow were counted in fields magnified 128 times and correlated with levels of bone density. This was determined by visual estimation of the spine x-ray and cortical thickness and external diameter of the second metacarpal at the mid-shaft. Normal mast cells counts occurred predominantly in patients with normal or only minimal decrease in bone density. In contrast, patients with a moderate or marked decrease in bone density had significantly increased number of mast cells in their bone marrow examinations. These findings suggest that mast cells and, theoretically, herapin which is synthesized by the mast cells, may potentiate bone resorption at the corticoendosteal and trabecular surfaces of bone. This may occur normally, but to a greater degree in patients with involutional osteoporosis.


A study is reported of pressor substances in the fetal kidney of pregnant dogs and their possible role in hypertensive disease of pregnancy. Renin yielding angiotensin was found to be present in the fetal kidney. Kidney renin concentration was much higher in fetuses of dogs with hypertensive disease of pregnancy. Evidence is presented to support the idea that renin readily crosses the placenta. A hypothesis is formulated that it is the renin from the fetal kidney and not the renin obtainable from the uterus, placenta, or amniotic fluid which may be involved in the blood pressure elevation of hypertensive disease of pregnancy.


Many anomalies of the coronary arteries may be corrected by surgical procedures. Those with fistulas into the right atrium, right ventricle and pulmonary artery are the most favorable for treatment. These have loud continuous murmurs. Four cases which have had surgical corrections are reported. The fistulas were closed with care to avoid interference with any myocardial branches of the tortuous arteries. Anomalous origin of the left coronary artery from the pulmonary artery was corrected in one patient by transplanting the origin of the artery to the root of the aorta. A vessel graft made of pericardium was used to bridge the gap between the left coronary artery and the aorta. In this case there was collateral circulation between the right coronary artery and the anomalous artery, producing a left to right shunt into the pulmonary artery. Where there is not much collateral circulation between the normal and anomalous left coronary artery, there is ischemia or even infarction of the left ventricle, and surgical procedures such as division of the origin of the anomalous artery are not beneficial. Cardiac transplantation may be the only effective treatment for this anomaly. The diagnosis in fistulas into the right side of the heart is established by right heart catheterization and the finding of an increased oxygen content in the affected chamber. Confirmation of all anomalies of the coronary arteries is by angiography via the root of the aorta.


Normally minute amounts of blood group specific substances — A, B, and H — are detectable in the serum or other body fluids of persons possessing secretor genes. An elderly female patient with gastric carcinoma was found to have excessive amount of both A and H antigens in her serum. Serum A-substance activity actually neutralized anti-A blood typing reagents. Immunofluorescence demonstrated both A and H substances in the cytoplasm of the tumor cells thereby suggesting that the tumor was at least in part responsible for the elevated serum levels of blood group substances.


Staining blood or bone marrow smears in a horizontal position by the classic methods limits the number and the quality of the stained smears. A considerable amount of technician time and experience is necessary for optimum results. A modified staining procedure is described by which a large number of slides can be stained in glass staining dishes. The dye is constantly aerated and mixed through the use of aerator coils which are connected to an air line. The results are extremely uniform and comparable to those obtained by the use of rather expensive commercial automated equipment.
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