Abstracts

The Annals of the Rheumatic Diseases exists primarily to publish original work in this particular field of medicine and related basic sciences. Pressure on space has become increasingly heavy and the Editorial Committee has decided to discontinue the section on abstracts from the July issue since, with the other abstracting systems now available, they are of limited value.

Readers may wish to be reminded of other services which cover medical and rheumatological literature:

(1) Royal Postgraduate Medical School Library Bulletin. Hammersmith Hospital, Du Cane Road, London W12 0HS. Issued weekly, annual cost £5.25. Supplies lists of contents only. Can also be seen at the Royal Society of Medicine (Bibliographical Department); British Medical Association (Editorial Department); London University Library; Kennedy Institute, London; most Medical Schools and Postgraduate Medical Centres.

(2) The Index of Rheumatology. Issued by the American Rheumatism Association, section of the Arthritis Foundation, 1212 Avenue of the Americas, New York, N.Y. 10036. Issued monthly, annual cost £3.00. Can be seen at the Royal Society of Medicine; Liverpool University Library; Kennedy Institute, London; National Lending Library, etc.

(3) Excerpta Medica (Arthritis and Rheumatism). 364 Herengracht, Amsterdam, The Netherlands. Issued monthly, annual cost £15.00. Can be seen at the Royal Society of Medicine; National Lending Library, Boston Spa, Yorkshire; National Reference Library, London; Kennedy Institute, London; Glasgow University Library; Leeds University Library; Reading University Library, etc.

(4) Current Contents (Life Sciences). Issued weekly by The Institute for Scientific Information, 325 Chestnut Street, Philadelphia, Pennsylvania 19106, USA. Annual cost $130. Supplies lists of contents only. Can be seen at the Royal Society of Medicine; British Medical Association (Editorial Dept.); Royal Postgraduate Medical School, etc.

Rheumatic fever

Acute Rheumatic Fever: Current Concepts


Rheumatoid arthritis

Pattern of Bone and Cartilage Damage in the Rheumatoid Knee


This paper from the Rheumatism Foundation, Heinola, describes the pattern of cartilaginous changes found in fifty consecutive knees subjected to synovectomy.

This pattern appeared to be relatively constant and related in severity to the duration of the disease process; early signs were seen in one knee after only 3 months' symptoms.

The findings were thought to support the concept that cartilage destruction appears in advance of the creeping pannus and is initiated by enzyme activity. 45 knees showed changes in the articular cartilage of the femur; the area involved in early cases extending from the lateral margin to the intercondylar notch. This area corresponds to that in direct contact with the synovium covering the altar fat. Areas of direct cartilage to cartilage contact were least affected.

Two types of cartilage damage were noted: complete destruction and fibrillation. Peripheral erosions were common, particularly on the femur. Ten cases showed a peripheral groove under the tibial plateau. In 25 the menisci had disappeared completely.

It is interesting to note that 44 knees had had previous intra-articular injections of osmic acid. A. R. TAYLOR


This paper from the University of Melbourne Department of Medicine correlates the degree of synovial lining cell proliferation and of lymphocytic infiltration, which vary independently of each other in the rheumatoid joint, with the degree of joint damage.

Synovial tissue was obtained during synovectomy from 42 joints in 36 patients with classical rheumatoid arthritis. The surgeon assessed the degree of joint damage, and graded it 1 to 4. The synovial membrane was examined independently and the degree of lining cell proliferation and of lymphocytic infiltration were each graded 1 to 4.

There was no correlation between the degree of joint damage, of lining cell proliferation, or of lymphocytic infiltration with the duration of disease in the joint. There was a significant direct correlation (P < 0.05) between the grading of lining-cell proliferation and that of joint damage, and a significant inverse correlation (P < 0.01) between the grading of lymphocytic infiltration and that of joint damage.

These findings were not apparently influenced by the drug therapy employed, including corticosteroids.

The authors draw an analogy with the pathological picture of leprosy, which shows a virtual absence of lymphocytes in the lesions in the severest form, but marked lymphocytic infiltration in the milder forms. They consider that the scanty lymphocytic infiltration into the severely damaged joints may represent a loss of cell-mediated immune processes, independent of circulating humoral antibody, i.e. rheumatoid factor. They conjecture that a study of lymphocyte-deficient synovia might lead to the discovery of a causative organism. J. R. DALY

Nodular Rheumatoid Lung. Study of One Case [In French] MENKES et al. 79, 2125

Effect of Chrysotherapy on Trace Metals in Patients with Rheumatoid Arthritis NIEDERMEIER et al. (1971) Arthr. and Rheum. 14, 533

Osteoarthritis


Examination of early radiographs in patients with osteoarthritis of the hips has demonstrated anatomical abnormalities comparable to those observed after epiphysiostomy, i.e. angulation of the femoral head on the neck, 'tilt deformity'. Epiphysiolsis occurs in adolescents, and a traumatic cause has been suspected. To examine the hypothesis that children's athletic activity might be implicated, the Royal National Orthopaedic Hospital and the Medical Research Council investigated three groups of males, aged 17 to 21 years.

Group A (94) Pupils at a boarding school with high intellectual and athletic reputation, previously at boarding preparatory schools.

Group B (77) 2/3 boarders, 1/3 dayboys, attended an equally intellectual school with no compulsory athletics.

Group C (80) Working in industry, had attended State schools with little compulsory athletics.

Height, weight, and age were comparable; questionnaires elicited personal history (including knee or hip discomfort, growing pains, or limp), and athletic history and prowess. Standardized pelvic antero-lateral radiographs were taken.

The increased incidence of 'tilt deformity' in Group A, compared with B and C, was statistically significant; other findings did not attain statistical significance but showed interesting trends, including a high incidence of 'tilt deformity' in boys who were notable athletes at preparatory school, increased incidence in those with history of growing pains or pain referred to knee or hip, and some suggestion that jumping was the activity most likely to cause damage.

M. E. R. GRAY


Spondylitis


Gout

Sequential Changes in Human Polymorphonuclear Leukocytes after Urate Crystal Phagocytosis: An Electron Microscopic Study SCHUMACHER et al. (1971) Arthr. and Rheum., 14, 513

Other forms of arthritis


At the Henry Ford Hospital, Detroit, 22 patients have undergone jejunoileostomy for refractory obesity, and nine have had jejunostomy. A number of complications ensued but this short report is confined to seven patients who developed articular symptoms after operation, which in all cases was jejunostomy.

In all seven patients the hands were affected by arthritis or teno-synovitis, and in some patients the feet, shoulders, or knees were involved. Rheumatoid factor and L.E. cells were never detected and routine biochemistry was normal.

In five patients symptoms abated within a year and were controllable by rest and aspirin. Two patients had more severe and persistent polyarthritis, and radiographs revealed small erosions in the wrists or metacarpal heads, 2 and 3½ years after operation. Both were given prednisone and one is still taking 7.5 mg daily. The other patient had her intestinal continuity restored 3 years after the first operation, and the joint symptoms disappeared within 3 weeks. A jejunal biopsy after the second operation was normal.

The relationship of this syndrome to the arthropathies which may complicate intestinal diseases is discussed.

M. R. JEFFREY

Radiographic Pattern of Polyarthritis in Reiter's Syndrome SHOLKOFF et al. (1971) Arthr. and Rheum. 14, 551

Bone disease


Nonarticular rheumatism


Connective tissue studies


Fibrinogen-fibrin Breakdown Products in Pathological Synovial Fluids: an Immunologic Study GORMSEN et al. (1971) Arthr. and Rheum., 14, 503

Synovial Fluid pH, Lactate, Oxygen and Carbon Dioxide Partial Pressure in Various Joint Diseases TREUHAFT et al. (1971) Arthr. and Rheum., 14, 475

Scale Effects in Animal Joints. II. Thickness and Elasticity in the Deformability of Articular Cartilage SIMON (1971) Arthr. and Rheum., 14, 493

Pararheumatic (collagen) diseases


A 94 per cent. follow-up of 309 patients with systemic sclerosis was obtained 7 years after the time of initial hospital diagnosis in 223 patients studied throughout at the University School of Medicine, Pittsburgh, and 7 years after the first hospital admission for systemic sclerosis in 86 patients from a Tennessee hospital.

Both groups were similar except that more joint involvement was found in Pittsburgh where the investigators had a special interest and also, probably because the University Centre attracts patients with kidney and heart disease, more of the Pittsburgh patients had renal or cardiac involvement.

The overall survival rate was 35 per cent. Patients aged 45 or over at onset, male patients, and Negro patients fared worse. All sixteen patients with renal involvement at onset died within months. Cardiac and, to a lesser extent, pulmonary involvement also shorten survival. The 141 patients who at entry, had no kidney, heart, or lung involvement showed a 7-year survival rate of 56 per cent.

The authors are unable to comment on treatment but hope that prognostic features at onset will be considered in future trials of treatment.

Mary Corbett


This report from the General Hospital, Newcastle upon Tyne, describes the results of treatment with methotrexate, azathioprine, or cyclophosphamide in seven cases of polymyositis responding poorly to steroid therapy alone.

Marked clinical improvement was seen in two patients treated with cyclophosphamide for 6 and 12 months respectively. One of these had an associated collagenosis and the other uncomplicated polymyositis. Of two patients with dermatomyositis, one showed moderate improvement to an initial dose of methotrexate followed by 9 months' azathioprine. The remaining three patients, two of whom had evidence of systemic sclerosis and one chronic rheumatoid arthritis in addition to the muscle weakness, showed no significant response for periods up to 2 months. In two of the favourable cases it was possible to demonstrate a slight improvement in the abnormal cellular responses to muscle antigen.

There is an interesting discussion of the indications for immunosuppressive therapy in this disease and it is concluded that it should be reserved for patients who are intolerant to steroids. No preference is expressed as to the choice of the immunosuppressive agent, except that antilymphocytic globulin is not recommended.

Deborah Doniach


This paper, from the Service de Dermatologie de la Fondation A. de Rothschild, 29 rue Manin F-75-Paris-19, presents the results of a study of 42 patients with lupus erythematosus. Twenty had localized chronic discoid lupus erythematosus, nine disseminated chronic discoid lupus, four 'intermediate' disease, and nine systemic lupus erythematosus.

Of 35 patients, 33 had skin lesions, and 23 of these had typical histological changes. All these 23 had myxovirus-like particles, not only in endothelial cells, but also in the lymphocytes of the inflammatory infiltrate. Six other patients also showed inclusions in diseased skin. The results of direct immunofluorescence studies on the basement membrane of diseased skin revealed deposits of immunoglobulin in 21 of 32 specimens. In addition, 37 biopsies were taken from areas of normal skin, six of which showed basement membrane fluorescence and three showed inclusions.

K. Whaley


This paper is based upon a combined study from the universities of California, Missouri, and Stanford, and from the Scripps Clinic at La Jolla. It is based upon 51 cases of SLE, which include 25 with symptoms referable to the central nervous system, 95 without SLE including 55 with lesions of the CNS, and 25 normal controls from whom cerebrospinal fluid (CSF) was obtained before spinal anaesthesia for cold surgery, e.g. herniorrhaphy.

Total complement (C) and many of its fractions were estimated both in serum and CSF by haemolytic as well as immuno-diffusion methods. The results in eleven of the patients with CNS complications of SLE showed a striking fall in C4 so that most of the values were less than 5 per cent. of the normal mean. This was interpreted as evidence of local consumption of C by immune complexes, an interpretation supported by:

(1) The lack of correlation between the lowering of the C4 in the CSF and the serum, the former being out of all proportion to the latter;

(2) The fact that in seven cases of SLE without CNS complications, despite much reduced serum levels of C4, the CSF levels were within normal limits;

(3) The fall in C4 in the CSF of SLE patients with CNS complications was detectable only by haemolytic methods and not by specific antibody to C4, thus indicating the presence of the haemolytically inactive C4i the known product of the interaction of immune complexes with the early components of complement.

L. E. Glynn


It is now possible to measure the antibodies to deoxyribonucleic acid (DNA) which have already been identified
in the sera of patients suffering from systemic lupus erythematosus (SLE). From the Georgetown University School of Medicine, U.S.A., the authors report on the development of a very sensitive quantitative test based essentially on the Farr ammonium sulphate technique for precipitating globulin. DNA itself is soluble in a half-saturated solution of ammonium sulphate but is precipitated when bound to immunoglobulin. A radioactive source of double-stranded DNA labelled with C\textsuperscript{14} thymidine was prepared from human tumour cells. When this is added to serum from SLE cases in a half-saturated solution of ammonium sulphate most of the radioactivity will appear in the precipitate. The exact percentage can be calculated from the readings of a scintillation counter.

The authors tested sera from 22 cases of SLE and compared them with those from twelve cases of rheumatoid arthritis, eighteen acute glomerulonephritis, 24 of other forms of renal disease, and 44 normal controls matched for age and sex. Only two of the 22 SLE cases showed readings of less than 20 per cent. in the precipitate, while none of the others showed readings above 12 per cent. The authors find that the level of anti-DNA correlates with activity of the disease and quote the case of a 12-year-old boy who was treated with prednisone and azathioprine. His condition improved and as the various parameters of activity returned to normal the titre of DNA fell from 96 to 24 per cent. Similar results were observed in twelve other cases. The authors say that they have not seen an untreated case of SLE with anti-DNA binding activity of less than 40 per cent. They consider that the finding of antibodies to double-stranded DNA is specific for SLE. The test is useful too as a guide to the efficacy of treatment.

WILLIAM HUGHES

Treatment of Discoid and Subacute Lupus Erythematosus with Cyclophosphamide SCHULZ and MENTER (1971) Brit. J. Derm. Suppl. 7, 60

Myoglobinemia and Myoglobinuria in Patients with Myositis KAGEN (1971) Arthr. and Rheum., 14, 457


Glomerular Cytoplasmic Tubular Structures in Renal Biopsies of Patients with Systemic Lupus Erythematosus and Other Diseases HURD et al. (1971) Arthr. and Rheum., 14, 539

Cardiovascular Manifestations of Disseminated Lupus Erythematosus [In French] BOUREL, M., GOUFFAULT, J., and BOUDESEUL, B. (1971) Coeur méd. interne, 10, 535


Natural History of Systemic Lupus Erythematosus by Prospective Analysis ESTES, D., and CHRISTIAN, C. L. (1971) Medicine (Baltimore), 50, 85

Immunology and serology

Studies of Cryoprecipitates from Synovial Fluid of Rheumatoid Patients CRACCHIOLO, A., GOLDBERG, L. S., BARNETT, E. V., and BLUESTONE, R. (1971) Immunology, 20, 1067

This paper from the Departments of Medicine, Rheumatology, and Surgery and Orthopaedics of the University of California, Los Angeles, presents the results of studies of the cryoprecipitates obtained from serum and synovial fluid samples from 27 patients with rheumatoid arthritis, one with psoriatic arthritis, one with Reiter’s syndrome, three with osteo-arthritis, two with gout, two with traumatic synovitis, and one with synovitis of unknown aetiology. Cryoglobulins were not found in any of the 37 serum samples, but in 24 of the 27 rheumatoid arthritics, and in the patients with psoriatic arthritis and Reiter’s syndrome cryoprecipitates were demonstrable in the synovial effusion. Of the cryoprecipitates isolated from the 24 patients with rheumatoid arthritis, eighteen were of the mixed IgG-IgM type with both kappa and lambda chains, five were IgG (4 containing only kappa and one both kappa and lambda chains), and one was IgM with both kappa and lambda chains.

Antinuclear activity was demonstrable in ten rheumatoid cryoprecipitates, and antiglobulin activity in nineteen. Single-stranded DNA was detected in three untreated cryoprecipitates, but after heat denaturation of the cryoprecipitates it was found in seventeen. The cryoprecipitates from the patients with psoriatic arthritis and Reiter’s syndrome had no antiglobulin or antinuclear activity. The authors conclude that cryoprecipitates in rheumatoid arthritis may represent cold insoluble antigen antibody complexes.

K. WHALEY


The concept of there being one population of non-cytotoxic lymphocytes producing specific antibody to target cell and a second population acting without immunological specificity but triggered into cytotoxic activity by antigen–antibody complexes on the target cell, is taken a stage further in the work from the M.R.C. Unit at Taplow.

The cytotoxic effect of peripheral blood lymphocytes, shown by the release of radio-chromium from Chang liver cells, was confirmed. There was no difference between the effect of cells from patients with arthritis and those from controls. However, about 20 per cent. of the joint fluids from patients with inflammatory arthritis showed
greater lymphocyte cytotoxic effect. The results could not be correlated with the underlying disease or activity of disease, but in any one patient different joint fluids or repeat estimations of fluid from the same joint gave very similar results.

The possible importance of this non-specific action in the production of joint disease is discussed.  A. G. MOWAT


Biochemical studies


Therapy


This paper describes a series of experiments carried out on anaesthetized dogs in the Department of Physiology, University of Illinois. Saliva was obtained from the exteriorized duct of a submaxillary gland after exciting secretion by either electrical stimulation of the isolated chorda tympani nerve, or by intravenous pilocarpine injection. Preliminary experiments established the dose of pilocarpine or the frequency of stimulation electrically that promoted optimum saliva flow without structural change or damage, and estimation of the total protein content of the saliva and of carbohydrate fractions, both free and protein-bound, was carried out; these fractions were sialic acid, fucose, hexoses, and hexosamines. In fact, the amount of free carbohydrate was insignificant. It was found that the content of protein and of carbohydrate was lower when secretion was evoked by pilocarpine than when an equivalent flow was produced by nerve stimulation.

Five dogs were given aspirin (4 g./kg.), usually for about 30 days, and further analysis of saliva after exactly similar stimulation was undertaken. The mean rate of secretion was not changed and the protein content unaltered; there was, however, a significant reduction in all the carbohydrate fractions, and this difference was more marked with pilocarpine stimulation (56 to 73 per cent.), than with electrical stimulation (25 to 44 per cent.). The sialic acid fraction appeared to be the most affected by aspirin. Five dogs were given cortisone (100 mg. daily). Again the protein content was unaltered and the carbohydrate fractions were diminished, but less markedly than with aspirin; the sialic acid fraction was the least affected of these.

These experiments were carried out under carefully controlled conditions and pains were taken to ensure that the glands were not overstimulated and were not damaged by the procedure.  B. E. W. MACE

Suppression of the Cellular interactions of Delayed Hypersensitivity by Corticosteroid CASEY, W. J., and MCCALL, C. E. (1971) Immunology, 21, 225 15 refs

This investigation into the afferent (adaptive) phase of delayed hypersensitivity comes from Wake Forest University, U.S.A. The specific inhibition of migration of macrophages from hypersensitized rabbits by sensitized lymphocytes exposed to the specific antigen, provided the quantitative in vitro assay. White N.Z. rabbits were sensitized with BCG in Bayol F intravenously. Pulmonary alveolar macrophages and lymphocytes were separated into capillary tubes. These were placed in MacKaness chambers with Earle's medium, normal rabbit serum, and penicillin G. Other tubes were similarly placed in chambers containing in addition 10 µg./ml. purified protein derivative. The area of migration was measured by planimetry. After exposure to PPD the series of unsensitized control rabbits gave a migration area of 11-0. The second series were BCG-sensitized and gave an area of 6-3. The third series, BCG-sensitized, received 3·5 mg./kg. corticosteroid beginning 10 days after sensitization and the area migration was 5-8, while the fourth series (also sensitized with BCG) received corticosteroid from the first day and gave an area figure of 10-6. Higher concentrations of corticosteroid decreasing migration was shown to be non-specific and to correlate with a lethal effect upon the cells. Simultaneous treatment with corticosteroid prevented the expected inhibition of macrophage migration after tuberculin challenge. The authors consider that 'corticosteroids directly block the adaptive processes of individual lymphocytes, which would otherwise become sensitized during the development of delayed hypersensitivities'.  HARRY COKE


Cytotoxic Therapy in Rheumatoid Disease THORPE et al. (1971) Med. J. Aust., 2, 796


Positive Coombs' Test, LE Cells, and Antinuclear Factor in Patients on Alpha-methyldopa HUNTER et al. (1971) Med. J. Aust., 2, 810

Rapid Serum-zinc Depletion associated with Corticosteroid Therapy FLYNN et al. (1971) Lancet, 2, 1169

Effects of Acetic and Acetylsalicylic Acids on the Appearance of the Gastric Mucosal Surface Epithelium in the Scanning Electron Microscope FRENNING et al. (1971) Scand. J. Gastroent., 6, 605


Influence of Phenylbutazone and Salicylic Acid on the Histamine Content of Rat Experimental Granuloma KALTIALA et al. (1971) Acta chir. scand., 137, 639

Surgery


Other general subjects

Four patients at the Royal Melbourne Hospital were used in this study reported from the University of Melbourne Department of Medicine. Cystic swellings related to joints were well outlined following the injection of 30-50μCi of $^{131}$I-HSA into the synovial or bursal cavity, exercising the limb for 30 minutes and scanning the joint and adjacent tissues 1-72 hours later. With this technique popliteal or calf cyst rupture could be diagnosed and distinguished from thrombophlebitis. The radiation hazard is considered slight in comparison with the risks and disadvantages of conventional radiography using phlebograms or arthograms.

A report from the Departments of Medicine and Surgery, University of Virginia School of Medicine, of fifteen patients who had splenectomy between 1950 and 1970 for Felty's syndrome with recurrent infections. In addition to neutropenia, twelve patients had anaemia and three thrombocytopenia. After splenectomy, the neutrophil count returned to normal within 48 hours in twelve patients and remained so in ten for 1 to 13½ years. One of the other two died of haemorrhage and sepsis and the other probably of sepsis. Two patients who did not improve had a raised lymphocyte count which might indicate misdiagnosis and a contraindication to surgery.

Five of the nine with recurring infections before surgery had fewer afterwards and normal neutrophil counts. Of the other four, one is unchanged, one was neutropenic and died, and two with normal counts died, probably of sepsis. Six other patients with this syndrome were similar in all respects but did not suffer repeated infections.

C. B. D'A. Fearn

Ultrastructural Studies of Renal Peritubular Amyloid experimentally induced in Guinea-pigs. II. Tubular Epithelial Cells Cohen et al. (1971) Arthr. and Rheum., 14, 429