bone at the neck of the scapula into which the spikes had been inserted.

A small group of patients has been studied in whom the prosthesis was being inserted with complete relief from pain and the provision of a stable, mobile shoulder. One technical problem not yet fully overcome has been a loss of some potential movement due to tightness of the inferior capsule despite division of this at operation, within the limits imposed by its anatomical relationship.

Discussion

DR. D. BREWERTON (*London*) We have an alternative prosthesis at the Royal National Orthopaedic Hospital with a total follow-up of 2½ years. So far six of the patients have had rheumatoid arthritis. Since this prosthesis has been available it has been even more apparent how many patients there are in a rheumatoid clinic with excruciating shoulder pain for whom there is no other satisfactory answer. Apart from relief of pain, retaining internal rotation and flexion has great advantages over arthrodesis.

MR. REEVES I thoroughly agree that rotation is very important and that an arc of at least 90° is necessary, which must be associated with a total abduction of about 90° before these patients can make proper use of their upper limb.

Cardiac Involvement in Rheumatoid Arthritis—An Echocardiograph Study. By P. A. BACON and D. G. GIBSON (*St. Bartholomew's Hospital, London*)

Pericarditis in rheumatoid arthritis (RA) has been recognized for 90 years. It may easily escape notice but careful clinical investigation will show its existence in 10 per cent. of patients with chronic RA (Kirk and Cosh, 1969). The incidence in *post mortem* series is higher, averaging 30 per cent. Endocardial and myocardial involvement with granulomata similar to rheumatoid nodules have been described (Sinclair and Cruickshank, 1956) and may occasionally present as clinical valvular heart disease. The frequency of endocardial involvement has not previously been estimated. The development of echocardiography has made it possible to examine both the pericarditis and the mitral valve by a harmless non-invasive technique. We have used echocardiography to investigate a series of 22 patients with chronic nodular RA, 22 patients with classical or definite non-nodular RA, and 22 osteoarthritic controls matched for age and sex.

Pericardial effusion was found in eleven (50 per cent.) of the nodular and four (15 per cent.) of the non-nodular patients. It was found at all stages of the disease. An effusion was not detected in any of the controls. The incidence of pericardial involvement in severe RA is found to be higher by this technique than the usual clinical estimate and approximates to the *post mortem* incidence.

A slow rate of initial mitral valve movement was seen more frequently in the nodular than in the non-nodular RA patients. The mean rate of movement in both groups was less than that of the control group. A very slow rate of mitral valve opening, comparable to that seen in rheumatic mitral stenosis, was found in three nodular patients, but none of the others. It is suggested that this may represent granulomatous infiltration of the valve while the more general slowing may be related to myocardial disease.

Discussion

DR. J. A. COSH (*Bath*) May I congratulate Dr. Bacon on this very nice presentation, confirming what can be found by careful clinical assessment.

You spoke of a posterior pericardial effusion in one case; does this mean that it was loculated by effusions? Does your technique tell us when there is shaggy thickening of the pericardium as distinct from free fluid?

Regarding the changes in the mitral valve, Cruickshank (1958) found non-specific changes in the endocardium and sometimes in the valve which are not the same as granulomata. Is this what you have been finding?

DR. BACON With large pericardial effusions one expects to find them both anteriorly and posteriorly. In these cases most were posterior, suggesting that they may be loculated, although there is no direct evidence to this effect.

Regarding the mitral valve, it is, of course, possible that this is non-specific thickening but, in most cases of so-called non-specific thickening that have been histologically examined, one has been surprised to find granulomata.

PROF. E. G. L. BYWATERS (*Taplow*) Have you had an opportunity to look at valvular movement in other patients with prolonged locomotor disability, and have you studied any cases of systemic lupus erythematosus where mitral disease sometimes occurs?

DR. BACON Most of the control patients, particularly the older ones, were in-patients for hip replacement for severe osteoarthritis. We have looked at one or two cases of systemic lupus erythematosus. They had abnormal myocardia but we have not seen a mitral valve abnormality.

References

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Surgical Trends in Rheumatology. By H. HILL (*Stoke Mandeville*)

An eighteen-bed Rheumatology Unit was established in the Oxford Region in 1953. The first operation, excision of the head of the radius, was performed in 1956. Now two-thirds of the in-patients are admitted primarily for a surgical procedure, this procedure being regarded as an incident in the overall management of rheumatic conditions. Patients are admitted to the medical ward and return there after the operation to ensure continuity of medical and nursing care, and physio- and occupational therapy.

From 1956 to 1970 patients have made 1,835 visits to theatre, 827 for major surgery, 687 for minor surgery, and 321 for manipulation. Manipulations were common in the early years, but this procedure is now largely confined to the ankle and tarsus. From 1962 to 1970, the annual number of minor operations has fluctuated between sixty and eighty. The number of major operations has risen gradually, and since 1956 has exceeded minor operations, now averaging 100 per annum. Total replacement of the hip, synovectomy of the knee, and excision of the lower end of the ulna account for most of the increased turnover in major surgery.

The indications for some operations are clear and

numbers have changed little, but others have been superseded and the pattern of change has varied from joint to joint.

In the knee (433 procedures), the indications for arthrodesis (8) and osteotomy (19) are clear-cut and have not changed: mould arthroplasty (40) had its vogue; synovectomy (143) reached a peak of thirty a year and subsequently fell to ten to twenty, which now seems likely to remain fairly constant; synovectomy has only recently been recognized as an essential complement to excision of a popliteal cyst.

In the hip (266 procedures, 112 major), the incidence of most minor operations has not changed, with the exception of iliopsoas release (85) in vogue for 3 years, reflecting the continual search for an effective remedy for chronic hip pain and deformity. Excision arthroplasty is now obsolete and total hip replacement (Charnley) provides eighteen to twenty new hips annually without making excessive demands on nursing care and physiotherapy. There has been no significant change in the number of osteotomies (24) during the 15 years.

In the wrist (231 procedures), arthrodesis (22) has been largely superseded by excision of the lower end of the ulna (84) providing relief of pain and a strong grip in addition to increased mobility.

In the elbow (116 procedures, 71 major), synovectomy has replaced excision of the head of radius as the main indication for operation. Operations on other joints have been important for individual patients but have made little impact on the surgical treatment of rheumatoid arthritis. Cervical fusion has saved four patients from devastating disability or death.

Discussion

DR. L. HOLT (London) Many of our cases are dealt with as out-patients. This has many benefits because the patient is not worried, and there is less fuss and less separation from home.

DR. F. ANDREWS (Reading) This creates a serious administrative problem. We are now devoting two operating lists a week to out-patients and more than two-thirds of our rheumatic beds are being used for surgery. Nevertheless, it appears that we are still only recognizing a quarter of those who require surgery.

DR. HILL We already do some minor operations on a day-case basis but we have not yet done a synovectomy. This procedure is usually performed on four or five joints at a time and it seems too much to expect anyone to accept this as an out-patient.

Cellular Hypersensitivity to Salivary Blood and Liver in Sjögren's Syndrome. By H. BERRY and P. A. BACON (St. Bartholomew's Hospital)

Sjögren's syndrome is the association of keratoconjunctivitis sicca and xerophthalmia (sicca syndrome or SS) with arthritis or other collagen disorder. SS has recently been described in association with certain 'auto immune' liver diseases, such as primary biliary cirrhosis and chronic active hepatitis.

Patients with Sjögren's syndrome show immunological disturbances with hypergammaglobulinaemia, a range of non-organic specific autoantibodies, and depressed reactivity to *D.N.C.B.* The histology of the salivary glands

shows infiltration with small lymphocytes and Sjøborg (1968) has shown cellular reactivity to parotid extracts in some patients with Sjögren's syndrome.

We have investigated cell-mediated immune reactivity to liver and parotid gland extracts, using the leucocyte migration test (IMT) in three groups of patients:

- (1) With auto-immune liver disease;
- (2) With Sjögren's syndrome with arthritis;
- (3) With rheumatoid arthritis with no evidence of SS;
- (4) A control group of healthy persons and patients with other diseases.

The results may be tabulated as follows

Group	1	2	3	Controls
No. of patients	34	14	44	40
+ve LMT to liver	26	0	1	1
+ve LMT to parotid	11	12	10	0

Reactivity to liver was seen in 77 per cent. of Group 1, but only one patient with rheumatoid arthritis and one control. Reactivity to parotid was seen in 33 per cent. of Group 1, 90 per cent. of Group 2, and 22 per cent. of Group 3. A labial biopsy was performed in five patients in Group 2 and in five positive and five negative reactors in Group 3.

This study confirms that SS is seen in certain liver diseases in the absence of arthritis. Cellular reactivity to liver is practically confined to autoimmune liver disease but reactivity to parotid gland is seen in patients with SS associated with arthritis disease. Parotid reactivity is also seen in some patients with rheumatoid arthritis alone. This may be evidence of early or subclinical SS.

Discussion

PROF. I. M. ROITT (London) This is an encouraging start, but I think that you must take into account the studies of Brostoff (1970) suggesting that leucocyte migration inhibition with mitochondria may occur in all sorts of unexpected conditions, such as Hashimoto's disease, pernicious anaemia, and other autoimmune diseases. Your extracts are extraordinarily crude and I think that you must try to characterize the principle in your parotid gland extract which specifically reacts with the Sjögren's syndrome patients.

DR. BERRY I should like to thank Professor Roitt for his helpful suggestions, which we would like to look into.

DR. R. N. MAINI (London) We are by no means clear about the significance of inhibition of leucocyte migration and whether it is necessarily a test of cell-mediated immunity, *i.e.* thymus or T-cell dependent immunity (Federlin, Maini, Russell, and Dumonde, 1971). We must also ask ourselves whether the results that you obtained were in any way related to the pathogenesis of the disease. The question arises because release of parotid tissue antigens may follow injury from disease, and may therefore be of secondary importance. Have you looked at patients who have parotid damage from something like an infection, where immune mechanisms are not of primary aetiological importance, to clarify this point? Therefore, does this test tell you that pathogenetic significance is reflected in the reactivity to the 'antigens' you have used?