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

- Cruickshank, B. (1958) *J. Path. Bact.*, **76**, 223
Kirk, J., and Cosh, J. (1969) *Quart. J. Med.*, **38**, 397
Sinclair, R. J. G., and Cruickshank, B. (1956) *Ibid.*, **25**, 313

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