As you might expect, we did not get a decisive answer after 6 months. Like Dr. Dixon we found a very striking placebo response after 3 months. 84 per cent. of the patients on placebo were improved at 3 months and over 50 per cent. at 6 months. There are two other points I should like to make. As in Dr. Dixon's trial no physical treatment was to be given to our patients unless absolutely necessary; but when the results were analysed, ten patients in the placebo group had had additional physical treatment, whereas only two in the Rumalon treated group had this treatment. The other point is that, unlike the hip trial, at the end of 6 months there was a definite trend in all the radiological parameters in favour of Rumalon; in one of these parameters, the reduction in the medial joint space approached a significant level. 5 per cent. of the Rumalon treated patients (with Grade 2 or 3 osteoarthritis) showed deterioration at 6 months and 25 per cent. of the placebo group showed deterioration. The x rays were read independently by three observers and are now going to be re-read by Dr. Popert and Dr. Golding.

**DR. J. H. GLYN (London)** If you want to get the Rumalon into the joint cartilage, why don't you put it there directly instead of giving it systemically? The cartilage presumably does not receive the Rumalon in high concentrations and it would seem more logical to inject directly into the joint. Has this been done? Could the difference in concentration explain the difference between the experimental results and the clinical results?

**DR. DIXON** I am not aware of any experiments with local injections. I do not think that you can assume that the conditions for the nutrition of chondrocytes in fairly advanced destructive osteoarthritis are the same as in the normal cartilage. It may well be that the nutrition from the subchondral vascular supply is far more important.

**DR. A. J. POPERT (Droitwich)** When we consider the results of any therapeutic trial it is important to have clearly in mind what information it is possible for that trial to produce. When a disease has run its full course it seems naïve to expect that any method of treatment should have any effect at all. I think that we should have learnt, by this time, that patients in advanced stages of a disease are best excluded from a therapeutic trial. Secondly, the duration of an experiment should bear some relation to the natural history of the complaint. In a disease with a life history extending perhaps over 20 to 50 years it would seem to me incredible that any treatment given over a period of weeks or months could produce any noticeable effect. Trials of this nature should be conducted over a long period of time, and preferably on patients in an early rather than an advanced stage of the disease. Finally, although I have not assessed patients in this trial, I have seen some of them from time to time. In an osteoarthritic knee with fairly advanced changes, crepitus is a striking physical sign; never yet have I seen crepitus, once present in an osteoarthritic knee, disappear. In two of the patients in this trial, however, whether they received the active substance or not, this sign has disappeared. One further patient I know, with severe rheumatoid arthritis and secondary osteoarthritis in the knees, was treated by her physician with Rumalon. She chanced to be referred to me later; I asked her whether it had helped her, and she said 'It did nothing to my knees, but it straightened out my fingers beautifully'.

**Stiffness of the Knee in Normal and Osteoarthritic Subjects.** By R. GODDARD, D. DOWSON, M. D. LONGFIELD, and V. WRIGHT (Leeds)

Part of the programme of the Bioengineering Group for the Study of Human Joints has been devoted to characterizing stiffness of the knee. Studies on the metacarpophalangeal joint have been extended to measure quantitatively and qualitatively the stiffness of a weight-bearing joint.

The apparatus imposes a sinusoidal motion on the knee at various amplitudes and frequencies of rotation. The torque resisting this motion was measured and related to rotational displacement. Physiological variations in stiffness of the knee were measured in relation to sex, age, and body temperature. Joints with osteoarthritis were studied, and in particular the characteristic phenomenon of 'articular gelling' was investigated.

**Discussion**

**DR. J. A. MATHEWS** I should like to ask whether, as the knee is a weight-bearing joint, an attempt was made to measure stiffness in the knee joint when it was in a weight-bearing condition?

**DR. GODDARD** We are aware of this problem of weight-bearing and we can see no other means at present of loading the joint physiologically and measuring it. In fact the only loading present was the slight load imposed by the weight of the thigh, and at present this is the only loading condition we are investigating.

**DR. H. L. F. CURREY (London)** May I ask whether the changes were recorded at different body temperatures? Might they be due to altered viscosity of the synovial fluid, for example, or perhaps to altered physical properties of the subcutaneous fat around the joints?

**DR. GODDARD** In the temperature investigations the major changes were in the elastic range of stiffness; changes in the viscous effect were negligible as far as we could tell.

**Radioisotope Studies of Rheumatoid Knees before and after Synovectomy.** By A. KAY, A. KATES, E. N. COOMES, C. B. CAMERON, and E. CHANDLER (London)

Ten patients with rheumatoid arthritis and knee involvement about to undergo synovectomy were studied to assess the amount of synovial tissue left at operation and the extent to which the synovium regenerated over the subsequent year.

In each patient the knee was scanned after the introduction of 50-70/μci of Au198 colloid, first 2 days before
operation and again 3 days after operation. A further
dose of Au\textsuperscript{198} colloid was introduced into the operated
knee after an interval of either 6 or 12 months and the
scanning was repeated.

Discussion

**DR. H. L. F. CURREY (London)** One does not know
to what extent work on animals is comparable in this
situation, but in experimental synovitis in rabbits the
synovium is completely and fully regenerated by 6 weeks
after synovectomy. But very often the disease process is
back in it again to the same extent. I think there is some
data on reoperated human knees, which suggest that the
rate of regeneration of synovium is about 6 weeks.

A SPEAKER I quite agree that synovium is obviously
fairly rapidly regenerated but this need not be the
normal or, shall we say, the abnormal previous synovium.
All you need are cells capable of taking up this colloid;
they could be macrophages.

**DR. J. H. GLYN (London)** If you only take up two-
thirds of the synovium by the anterior approach and
leave behind most of the other third, it seems that what
is important is whether the synovium is regenerating from
the tissue in the posterior part of the knee joint. If so,
it would be interesting to remove the other third of
the synovium by a posterior synovectomy and see if
the same speed of regeneration follows.

**Athetoid Movements in Cervical Spondylosis.** By E. R.
BICKERSTAFF (Birmingham)

The combination of high cervical spondylosis with an
abnormally narrow cervical canal can cause compression
of the posterior part of the cord and loss of postural
sense in the arms (and not the legs), resulting in athetoid
'searching' movements of the upper limbs when the eyes
are shut. This causes serious disability, but other signs
of the disease are often lacking, and if the existence of
this condition is not appreciated many patients may be
diagnosed as 'hysteria'.

Discussion

A SPEAKER Does this condition occur if the upper
segments of the cervical spine are affected by arthrosis?

**DR. BICKERSTAFF** The fibres for position sense travel
some distance up the spinal cord after entry, in a very
irregular manner. For the muscles innervated from the
upper part of the cervical cord to be affected the lesion
would need to be at least as high as the foramen magnum.
In occasional lesions at that level, such as in basilar
invagination and some cases of syringomyelia, one may
see it affecting the whole arm. But in cervical spondylosis
the lesion is usually at a slightly lower level and affects
the much lower fibres to the fingers.

**DR. J. A. MATHEWS (London)** How do you establish
the causal relationship of cervical spondylosis to the
athetoid movements?

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**DR. BICKERSTAFF** This is of course an enormous
question to answer. Usually one expects athetoid move-
ments to be associated with disease at some very much
higher level. But when one has seen a large number of
patients who have no disease, as far as one can tell, of
the brain or brain stem, who have a reproducible syn-
drome which is seen over and over again with lesions
at one particular level in the cervical area, somewhere
between the foramen magnum and C4/C5, this seems to
me to make an association that one cannot escape from.
The nicest way of proving this would be to find some
method that completely cured the cervical spondylosis,
and if the whole thing cleared up that would be proved
indeed. I can only say that, in one or two patients who
have had tumours affecting the posterior part of the
spinal cord, these movements have cleared up on re-
moval of the neoplasm.

**DR. D. N. GOLDING (Harlow)** Have you ever seen any
improvement following the application of collars?

**DR. BICKERSTAFF** In the patients who have reached
the advanced state that I showed here the answer cer-
tainly is 'no'.

**Hypnospray Treatment of Tennis Elbow.** By G. R. HUGHES
and H. L. F. CURREY (London) Published in full in the

**Thyroid Disorders presenting with Musculoskeletal
Symptoms.** By D. N. GOLDING (Harlow) Published in full in the

**Rheumatic Disease in Patients suffering from Scleral
Disease.** By P. FOWLER (Manchester)

Observations during a clinical trial of treatment of
episcleritis and scleritis had suggested an unusual
prevalence of rheumatic disease. This paper reports the
findings in 42 patients diagnosed as having episcleritis
(26) or scleritis (16) and selected at random from the
Scleritis Clinic at Moorfields Eye Hospital, London,
who were examined for associated diseases with special
reference to the locomotor system.

Three patients had definite rheumatoid arthritis and
a fourth had possible inactive rheumatoid arthritis.
The diagnostic clinical facts and radiological and
laboratory findings were related to population studies of
rheumatoid arthritis.

Sacroiliac joint changes were found in seven patients.
There were one definite and one possible male case and
one possible female case of ankylosing spondylitis, no
cases of gout, one case of Reiter's disease, and many
cases of degenerative joint disease.

While rheumatoid arthritis is known to be related to
scleral disease, the finding of overt ankylosing spon-
dylitis in overt or in a sub-clinical form with symptomless
changes in the sacroiliac joints has not previously been
reported in this connection.
Radioisotope studies of rheumatoid knees before and after synovectomy.
A Kay, A Kates, E N Coomes, C B Cameron and E Chandler

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