

Assessment of the Anti-inflammatory Effect of Intra-articular Steroids by means of External Temperature Measurements. By F. LLOYD WILLIAMS, F. J. RING, and J. COSH (*Bath*)

The cooling effect of steroids injected into the knee in patients with rheumatoid arthritis was studied by a simple technique of external temperature measurement. A radiometer, sensitive to radiant heat emitted from the skin, was used to measure the temperature of an area of skin over the front of the knee. Further information was obtained by following the rate of re-warming of the skin after cooling the knee with an ice-pack.

These readings were compared with direct measurements of intra-articular temperature, with thermograms, and with studies of clearance rates of radioactive isotopes injected into the joint.

Discussion

DR. D. N. GOLDING (*Harlow*) It has been suggested that in psoriatic knee joints there is a larger rise of temperature, and it has even been suggested that the pattern of the thermogram in psoriatic arthritis is different. Have you any explanation of this?

DR. COSH No, we have not. We have done a number of thermograms of rheumatoid disease and there were some psoriatics among them.

DR. H. L. F. CURREY (*London*) I believe that steroids applied locally to the skin produce a local vasoconstrictor effect. Have you any information about the effect of topical steroids on the local circulation in the synovium? Do you think the drugs have a pharmacological vasoconstrictor effect locally in the joint? If so, do you think this contributes in any part to their activity when given into inflamed joints?

DR. COSH If they do have such a vasoconstrictor effect, it is likely to be short-lived. I think this is more likely to be due to a pharmacological effect on inflammation rather than purely on the blood vessels.

Observations *in vivo* on the Tensile Properties of Human Skin. By R. GRAHAME, R. BLUESTONE, and P. J. L. HOLT (*London*)

A simple suction-cup device suitable for clinical use has been adapted to measure the tensile properties of skin *in vivo*. Stress/strain curves were constructed and variations in their relationship in normal skin, acromegaly, scleroderma, and other diseases observed. The information derived from this test has been used to follow the course of these diseases and the response to treatment.

Clinical Meeting, September, 1969

At a meeting held at the Littlewood Hall, General Infirmary, Leeds, on September 26, 1969, the following papers were given:

Relationship of Infection to Rheumatoid Factor in the Population. By J. S. LAWRENCE (*Manchester*)

Persons having positive tests for rheumatoid factors in population samples in Leigh and Wensleydale have been investigated for evidence of infections. Routine x rays were taken of the nasal sinuses and lungs, the forced expiratory volume was estimated, and cultures were made of throat swabs and midstream specimens of urine. Antistreptolysin-O, salmonella, and brucellar antibodies were estimated in the serum. There was a significant association between the results of the sheep cell agglutination test and the occurrence of sinusitis, pulmonary fibrosis, urinary infection, and salmonella and brucellar antibodies.

Discussion

DR. HOLT (*London*) Have you completely ruled out the question of age? Rheumatoid factor becomes more prevalent in the older person.

DR. LAWRENCE We corrected the figures for age distribution by taking 10-year age groups, but the relationship between rheumatoid factor and lung infection still remained significant. The other infections were studied in age-matched groups.

DR. BALL (*Manchester*) I examined about thirty cases of chronic fibroid tuberculosis, and at that time the prevalence of sero-positivity was about 3 per cent., which was about the expected prevalence in the general population and hence did not suggest an association of rheumatoid factor with tuberculous infection.

DR. LAWRENCE We did not find any association with active tuberculosis. There was only one case of active tuberculosis in the whole series. This is an association with healed tuberculosis. You may say that perhaps the condition healed because the patients had rheumatoid factor which protected them in some way, and it would be difficult to argue against this. I should have thought it more likely that the tuberculosis not only stimulated the rheumatoid factor but was also perhaps reduced in severity and therefore able to heal because of this.

DR. BUCHANAN (*Glasgow*) Could you please tell me, Dr. Lawrence, how consistent are weakly positive tests for rheumatoid factor? I also wonder whether you have considered examining patients with positive tests for rheumatoid factor for evidence of Sjögren's syndrome?

DR. LAWRENCE We did not specifically look for Sjögren's syndrome, and I cannot say how far transient tests are concerned. Dr. Ball estimated the rheumatoid factor during this survey in addition to his tests 5 years previously, and we found that those who had recovered, in whom the titres had become negative, had nevertheless an association with these diseases.

DR. CURREY (*London*) I wonder whether you have had the opportunity of looking into the question of whether the presence of rheumatoid factors in the serum influenced the result of the agglutination test? Antiglobulins might augment the agglutinating property of a serum and this would clearly invalidate the test.

DR. LAWRENCE We have some experiments in progress to deal with that point. Actually the antibodies to *Salmonella* which were tested were somatic antibodies, so that they should have been IgM globulins which would not react with rheumatoid factor. I do not think that it is likely that that is the explanation, but it certainly needs checking.

Neuromuscular Disorders associated with Rheumatoid Arthritis. By D. I. HASLOCK, D. F. HARRIMAN, and V. WRIGHT (*Leeds*)

A study has been undertaken of 28 patients with rheumatoid arthritis who have had a motor point biopsy. The pathology of the excised neuromuscular tissue was examined. The patients formed four major groups:

- (1) Muscle cachexia,
- (2) Peripheral neuropathy,
- (3) Myositis,
- (4) Steroid myopathy.

Motor point biopsy was found to be the only certain method of differentiating Groups 1 and 2.

Discussion

DR. TALAL (*Bethesda*) We also have had a chance to observe patients similar to the first group that you described with the plasma cells. Do you think that such patients are more likely to show elevation of muscle enzymes in serum, and are they more likely to respond to immunosuppressive therapy?

DR. HASLOCK We have not estimated the muscle enzymes in the serum, so I cannot comment on that. It is a little difficult to assess the role and effect of corticosteroids. A disproportionate number of patients were taking corticosteroids when they came to biopsy. Whether this is a reflection of the fact that the more severely affected patients were given corticosteroids, or whether the corticosteroids played some part in the aetiology of some of these changes I do not know. We have had no experience with other forms of immunosuppression.

PROF. KELLGREN (*Manchester*) Have any of your patients suffered from the picture of profound myositis sometimes seen in rheumatoid arthritis with central weakness and high enzyme levels?

DR. HASLOCK These were not patients with malignant rheumatoid arthritis, but all of them showed disproportionate wasting. Not all of them showed global wasting. Some muscles, particularly the quadriceps, became more resistant to treatment and would be wasted. In one or two of the cachectic group we found that the proximal muscles were more affected than the distal. We have one case in which we carried out both proximal and distal

biopsy. The distal biopsy showed changes of neuropathy, the proximal biopsy changes of cachexia.

DR. BALL (*Manchester*) Were samples of non-motor point biopsy taken simultaneously?

DR. HASLOCK All were taken at the motor point.

PROF. DUTHIE (*Edinburgh*) Would you like to enlighten those who do not know the difference between Type 1 and Type 2 fibres?

DR. HASLOCK I think Dr. Harriman had better explain this.

DR. HARRIMAN Briefly, the difference between Type 1 and Type 2 muscle fibres is the difference between red and white meat. Most of us have a mixture of the two types of cells in all our muscles, whereas some animals have predominantly red or white cells. Type 1 is the slow-reacting cell with oxidase enzymes and staining darkly. Type 2 contains anaerobic enzymes, is fast-acting, and is responsible for quick movements. In recent years it has been demonstrated in man that every muscle has a mixture of these two cells; we found in two of our patients that the atrophy was greater in the Type 2 cells, while in the other patients there was a mixture.

PROF. DUTHIE (*Edinburgh*) Do you attach any significance to this?

DR. HARRIMAN Not yet. I think we have yet to learn much more about it.

Cost-benefit Analysis of the Treatment of Rheumatic Diseases. By R. G. BROOKS (*Department of Economics, University of Strathclyde*) Published November 1969 *Annals* 28, 655

Discussion

PROF. DUTHIE (*Edinburgh*) You say that, of the people you have interviewed, so many had surgery and all were successful. Was conservative treatment ineffective?

MR. BROOKS I did not consider the possible benefits from conservative treatment.

PROF. DUTHIE (*Edinburgh*) This would suggest that we could wipe out conservative treatment.

MR. BROOKS No, in the time available I could not study the effectiveness of conservative treatment.

PROF. DUTHIE (*Edinburgh*) Your cost benefit is related to a certain proportion of people who were operated on?

MR. BROOKS Yes, that is right.

PROF. DUTHIE (*Edinburgh*) If you are right, then surgery seems the thing to do. You can save all the money you spend by surgery.

MR. BROOKS If I had had the time and money I should have interviewed far more people to see whether conservative treatment had been effective. As stated in my paper, not all patient categories were interviewed, a