Indications for Intra-articular Steroid in Osteo-arthritis of the Ankle and Big Toe Joints

T. L. SARKIN

SUMMARY

The results of treatment with intra-articular steroid in an unselected group of patients with osteo-arthritis of the ankle and metatarsophalangeal joint of the big toe are described. From the results of this trial it is possible to lay down indications for the use of intra-articular steroid in these conditions. In the ankle joint it is suggested that symptoms must not be so severe as to be disabling, and that the interval of time between the precipitating trauma and the onset of symptoms should be as long as possible, but certainly not less than 2 years.

In osteo-arthritis of the metatarsophalangeal joint of the big toe, for intra-articular steroid injections to be of value there must be no hallux valgus deformity and at least 45° of free movement must be retained in the affected big toe joint.

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Osteo-arthritis of the ankle joint and of the metatarsophalangeal joint of the big toe are common disabilities[1] for which treatment, in general, is unsatisfactory.[2] Although intra-articular injections of steroid enjoyed a vogue at one time,[3] their frequent lack of success and the occasional reports of increasing joint destruction after their use, have led to a loss of interest in this form of treatment and it has to some extent, therefore, gone out of fashion.[4] However, at times a dramatic improvement is obtained after the administration of intra-articular steroid, and this prompted this investigation into the indications for its use in osteo-arthritis of the ankle and big toe, especially as a previous investigation into osteo-arthritis of the knee joint[5] had shown that it was possible to lay down definite indications for the use of intra-articular steroid in osteo-arthritis of the knee joint.

PATIENTS

One hundred consecutive patients, who were diagnosed by a group of orthopaedic surgeons as suffering from osteo-arthritis of the ankle joint, were included in the trial. Of these, 76 were males and 24 were females. The patients' ages varied between 26 and 58 years, the average age being 44 years.

A further 200 consecutive patients, who were diagnosed as suffering from painful osteo-arthritis of the metatarsophalangeal joint of the big toe, were also selected for the trial. Of these, 181 were females and 19 were males. Patients' ages varied between 48 and 78 years, the average age being 57 years.

All the patients who had osteo-arthritis of the ankle joint had a history of trauma to the area, either a fracture which had involved the ankle joint or a malunited fracture of the lower tibia. In none of the 200 patients with osteo-arthritis of the metatarsophalangeal joint was any obvious history of trauma present.

PROCEDURE

From each patient with osteo-arthritis of the ankle joint a careful history was taken and an examination made. The following 4 points were found to be important: (*i*) a detailed history of previous trauma; (*ii*) the type and severity of the present symptoms; (*iii*) the interval which had elapsed between the original trauma and the onset of present symptoms; and (*iv*) the exact extent of the present disability and the degree to which symptoms interfered with work and leisure activities.

From each patient with osteo-arthritis of the metatarsophalangeal joint of the big toe a history was taken and an examination was made. The following 3 points were found to be important: (*i*) the type, site and severity of symptoms; (*ii*) any hallux valgus deformity which was present in the big toe; (*iii*) the exact range of free movement present in the metatarsophalangeal joint of the affected big toe.

Each affected ankle joint and metatarsophalangeal joint of the big toe was injected with 6 mg of betamethasone weekly, either until all symptoms had disappeared or until a maximum of 3 injections had been given. At no time in the whole trial were more than 3 injections given to any one patient.

RESULTS

Osteo-arthritis of the Ankle Joint

Of the 100 patients with osteo-arthritis of the ankle joint it was found that those who improved could be identified according to two criteria: the severity of symptoms, and the time interval which had elapsed between trauma and the onset of symptoms.

The severity of symptoms was classified into 5 grades:

Grade I: Patients who had radiological evidence of osteo-arthritis of the ankle, but no symptoms.

Department of Orthopaedics, University of Natal, Durban
T. L. SARKIN, M.D., CH.M., F.R.C.S.

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Grade II: Patients with early mild symptoms, but still able to maintain full activities, both at leisure and at work.

Grade III: Patients with symptoms which were sufficiently troublesome to reduce their leisure activities, but who were still able to work fully.

Grade IV: Patients with symptoms which were severe enough to interfere with work.

Grade V: Patients who were totally disabled because of the osteo-arthritis of their ankles.

Using this classification, it was found that only patients in grades II—IV were improved with intra-articular injections, i.e. patients whose symptoms were not yet severe enough to disable them totally. In patients who were totally disabled, intra-articular injections of steroid were of no value.

The second factor of importance was the length of time which had elapsed between the traumatic event which resulted in the osteo-arthritis of the ankle and the onset of symptoms (Table I). Where the interval was less than 2 years, there was a poor response to the intra-articular injections of steroid—of 55 patients, only 5 (9%) were improved. Where the interval was 2 - 10 years, the results were better—of 24 patients, 13 (55%) were improved. The best results were obtained where the interval was more than 10 years—of 21 patients, 17 (85%) were improved.

TABLE I. RESULTS OF TREATMENT COMPARED WITH INTERVAL BETWEEN TRAUMA TO THE ANKLE AND ONSET OF SYMPTOMS DUE TO OSTEO-ARTHRITIS

Time interval	Total number of patients	Number improved	Number not improved
<2 years	55	5 (9%)	50 (91%)
2 - 10 years	24	13 (55%)	11 (45%)
>10 years	21	17 (85%)	4 (15%)

Osteo-arthritis of the Metatarsophalangeal Joint of the Big Toe

Of the 200 patients, 186 declared that they were not improved and required further treatment. Of the 14 patients who were satisfied, it was found that only 1 had a hallux valgus deformity, whereas in 13 there was no deformity of the big toe.

A second trial was, therefore, carried out on a further 100 patients who had osteo-arthritis of the metatarsophalangeal joint of the big toe, but who had no hallux valgus deformity. It was found that the results of intra-articular steroid injections depended largely upon the degree of free movement which was retained in the joint (Table II).

TABLE II. RESULTS OF TREATMENT COMPARED WITH RANGE OF FREE MOVEMENT RETAINED IN THE METATARSOPHALANGEAL JOINT OF THE BIG TOE

Range of free movement	Total number of patients	Number satisfied	Number dissatisfied
<45°	58	10 (16%)	48 (84%)
>45°	42	35 (85%)	7 (15%)

Of 58 patients who had less than 45° movement in this joint, only 10 (16%) were satisfied. On the other hand, of the 42 patients who had a range of movement in excess of 45°, 35 (85%) declared themselves satisfied and required no further treatment. They were followed up for at least 2 years.

DISCUSSION

From this trial it appears, therefore, that in osteo-arthritis both of the ankle joint and of the metatarsophalangeal joint of the big toe, there are definite indications when intra-articular steroids could be of value.

For osteo-arthritis of the ankle joint it is important that the patient's symptoms should not be so severe as to be completely disabling, and secondly, the interval between the trauma which precipitates the osteo-arthritis and the onset of symptoms should certainly not be less than 2 years—ideally, the longer this interval the better the prognosis. Where the interval is 10 years or longer, the probability of intra-articular steroids being of value is high.

In osteo-arthritis of the metatarsophalangeal joint of the big toe, intra-articular steroid is only of value in cases where, firstly, there is no hallux valgus deformity present and secondly, where a degree of free movement in excess of 45° has been retained in the joint.

In none of the 400 patients treated during this trial was there any evidence of increasing joint destruction following the short course of intra-articular steroid which was given.

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