INTRA-ARTICULAR HYDROCORTISONE IN
OSTEO-ARTHROSIS

BY

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There is no doubt about the value of intra-articular hydrocortisone in the treatment of rheumatoid arthritis. Controversy has arisen however about its value in the treatment of osteo-arthritis. Hollander, who introduced this useful form of therapy, has remained an advocate of its use in both conditions (Hollander, 1966). Because of the lack of distinction between the response in patients with rheumatoid arthritis and those with osteo-arthritis, it is not always easy to evaluate previous reports (Duff, 1956; Zuckner, Machek, and Ahern, 1956; Bonner, 1959).

In a trial of intra-articular injections of hydrocortisone acetate and hydrocortisone tertiary butyl acetate, we showed only a transient relief of pain in patients with osteo-arthritis compared with the good results by many criteria in rheumatoid arthritis (Chandler, Wright, and Hartfall, 1958; Wright, Chandler, Morison, and Hartfall, 1960). It was noted that a third of the patients improved after the injection of inert material and a study of those placebo reactors was made (Morison, Woodmansey, and Young, 1961). An investigation was then undertaken of the effect of courses of placebo tablets, intra-articular placebo injections, and short-wave diathermy on osteo-arthritis of the knees. The results suggested that physiological saline was likely to be as effective as hydrocortisone or its analogues in the treatment of osteo-arthritis (Wright, 1964). Hollander (1965, 1966) has challenged this conclusion vigorously. He suggested that our results with hydrocortisone were no more beneficial than those with placebo injections because the joint space had not been entered from the infra-patella approach that was used. The present communication describes investigations designed to resolve this conflict.

Material and Methods

Studies were done on four knees at autopsy. The knees of two women with osteo-arthritis, who were aged 62 and 66 respectively, were injected with 2 ml. methylene blue via the infra-patella approach used in our previous studies. Immediately after injection the joint was dissected by an independent pathologist (Dr. Colin Wood).

A trial was conducted in which 36 knees of 26 patients, with osteo-arthritis were injected with 50 mg. hydrocortisone acetate following attempted aspiration of all fluid in the joint cavity. In ten patients both knees were injected.

Two techniques of injection were used. The first was by an infra-patella approach with the knee flexed to 90°, the injection being made over the lateral condyle of the tibia with the needle directed upwards and medially. The second was by a medial approach with the leg straight, the injection being made between the patella and the patellar groove of the femur. The technique used for each joint was randomized on a master sheet. Before injection the patient was examined clinically and serologically, and an x ray of the knee was taken. The amount of pain the patient experienced was graded as nil (0) mild (1), moderate (2), or severe (3). One author performed the injection and the patient was reviewed 4 weeks later by the other author, who was unaware of which technique had been used. The amount of subjective pain at review was graded and the patient's impression of the degree of improvement was noted.

Autopsy Study

In all instances the needle track was seen to enter the joint cavity from the infra-patella approach and the dye was spread throughout the joint.

Clinical Study

The comparability of the two groups of patients is seen in Table I (opposite). In all patients the blood sedimentation rate was normal and rheumatoid factor was absent from the serum.
**INTRA-ARTICULAR HYDROCORTISONE**

**Table I**

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Patients</th>
<th>Mean Age</th>
<th>Arthritis Status</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>No. of Males</td>
<td>Mean Age at Onset</td>
</tr>
<tr>
<td>Infra-patella</td>
<td>17</td>
<td>2</td>
<td>63.0</td>
</tr>
<tr>
<td>Medial</td>
<td>19</td>
<td>2</td>
<td>53.5</td>
</tr>
</tbody>
</table>

The results of treatment are shown in Table II. No patient improved by more than one grade. The patient's interpretation of a Grade 1 improvement was "slight" and that of a Grade 2 improvement was "great".

No patients were made worse as a result of treatment. More patients improved after injection via the medial approach (58 per cent.) than via the infra-patella approach (41 per cent.), but this difference is not significant ($X^2 = 1.003; P > 0.4$). Great improvement was also experienced more often with the medial approach (37 per cent. compared with 24 per cent.), but these figures are not significantly different and do not differ markedly from the expected incidence of placebo reactors. No fluid was aspirated from the infra-patella approach, whereas seven joints yielded fluid from the medial approach. However, in none of these seven was the joint symptomatology improved by the procedure. In seven patients in whom both knees were injected, a different technique was used for the contralateral joint. There was no difference between the response in five patients, in one the knee injected by the medial approach improved slightly whereas that injected by the infra-patella approach did not, and in another the reverse occurred.

**Discussion**

Intrasynovial corticosteroid therapy is a valuable adjunct in the treatment of rheumatoid arthritis, but it is not without its dangers. Apart from the occasional case of infection, destructive changes may occur in the joint. This is true both of rheumatoid arthritis (Chandler and Wright, 1958) and of osteo-arthritis (Chandler, Jones, Wright, and Hartfall, 1959; Alarçón-Segovia and Ward, 1966).

The view expressed in the latest American textbook of rheumatology is that the rarity of the occurrence of this complication and the benefit of the procedure are such as to justify it in both diseases (Hollander, 1966; Abrams, 1966). It is important, however, to note that the evidence of controlled studies is that such therapy in osteo-arthritis exerts little more than a placebo effect (Miller, White, and Norton, 1958; Wright and others, 1960). Hollander (1965, 1966) believes that the explanation of the results we obtained was that the joint was rarely entered by the approach used. The present study, by an autopsy investigation and a control trial, has shown conclusively that this is not so. It is true, as Hollander remarks, that synovial fluid is more readily obtained by the medial approach, but it is fallacious to state that the joint is not entered by the infra-patella approach. It is a striking observation that none of the seven patients from whom joint fluid was obtained improved with intrasynovial hydrocortisone. Results obtained by both techniques suggest that the improvement gained was little more than that to be anticipated by a placebo reaction.

**Summary**

An autopsy study on four knees with osteo-arthritis has shown that the joint cavity is readily entered by the infra-patella approach. A control trial of 36 knees with osteo-arthritis injected with hydrocortisone, by either the infra-patella or the medial approach, has shown that the clinical improvement obtained from the two approaches is virtually the same, and that this is similar to that anticipated from a placebo response. Synovial

**Table II**

<table>
<thead>
<tr>
<th>Treatment Group</th>
<th>Improvement</th>
<th>Fluid Aspirated (ml.)</th>
<th>Total No. of Joints</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nil</td>
<td>Slight</td>
<td>Great</td>
</tr>
<tr>
<td>Infra-patella</td>
<td>10</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Medial</td>
<td>8</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Tot.:l</td>
<td>18</td>
<td>7</td>
<td>11</td>
</tr>
</tbody>
</table>

The occurrence of a minimal fluid aspirated in the control series is of interest. While no fluid was aspirated from the infra-patella approach, seven joints yielded fluid from the medial approach. However, in none of these seven was the joint symptomatology improved by the procedure.
fluid was obtained on seven occasions from the medial approach, but none of these patients benefited clinically. It is concluded that the medial approach is better for obtaining joint fluid, but it is untrue to say that the joint is not entered or the drug fully injected by the infra-patella route.

REFERENCES


L'hydrocortisone intra-articulaire dans l'ostéarthrose

RÉSUMÉ

Une étude autopsique de quatre genoux atteints d'ostéarthrose a montré que la cavité articulaire peut être pénétrée facilement par la voie infrapatellaire. Un essai contrôlé sur 36 genoux atteints d'ostéarthrose et injectés d'hydrocortisone, par la voie soit infrapatellaire, soit médiane, a démontré que l'amélioration clinique était virtuellement identique et qu'elle ressemblait à celle qu'on obtient avec un placebo. On a prélevé du liquide synovial sept fois par la voie médiane, sans que les malades en bénéficient cliniquement. On en conclut que la voie médiane et plus avantageuse pour obtenir du liquide synovial, mais il n'est pas vrai que la cavité n'est pas pénétrée ou le médicament complètement injecté par la voie infrapatellaire.

La hidrocortisona intra-articular en la osteoartrosis

SUMARIO

Un estudio de autopsia de cuatro rodillas con osteoartrosis demostró que la cavidad articular puede penetrarse fácilmente por la vía infrapatellar. En ensayo controlado sobre 36 rodillas con osteoartrosis inyectadas de hidrocortisona por las vías tanto infrapatellar como mediana reveló mejorías clínicas virtualmente idénticas y similares a las que se suele obtener con un placebo. El líquido sinovial fue recogido siete veces por la vía mediana, sin provecho clínico para los enfermos. Se concluye que la vía mediana es más ventajosa para recoger líquido sinovial, pero no es cierto que la cavidad no se puede penetrar o el medicamento inyecta completamente por la vía infrapatellar.