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TREATMENT OF UNDESCENDED TESTIS
WITH HUMAN CHORIONIC GONADOTROPHIN

By
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ABSTRACT

During the period 1953 to 1960, 52 boys with cryptorchism were treated with human chorionic gonadotrophin. The majority of patients were treated after the age of eleven. The material presented is in several respects a selected one as patients with retractile testes and with mechanical obstruction to the descent were as far as possible excluded. The total dose of gonadotrophin varied between 6600 and 17400 IU which is considered a moderate dose. The results was satisfactory with regard to testicular position, size and consistency in only 10 patients or expressed in terms of individual testes in 16 cases. Factors that may have influenced the incidence of descent are discussed.

Treatment of undescended testis with human chorionic gonadotrophin (HCG) was introduced into clinical practice by Schapiro in 1930 (Schapiro 1931). Since then a large number of papers on this subject have appeared but the value of the treatment is still under discussion. References to some of the more important contributions are found in the monograph by Charny & Wolgin (1957).

In a previous paper (Bergstrand & Qvist 1960) the results of surgical and hormonal treatment in two groups of boys with cryptorchism chosen at random were described. It was found that administration of HCG was much inferior to orchiopexy in bringing the testis into a normal scrotal position. The results of surgical treatment were considered satisfactory in 26 out of 35 patients as against 5 out of 23 patients given HCG. As much greater success with hormonal treatment has recently been claimed (Brunet et al. 1958; Fortuna 1958) it was thought of interest to study the results in a larger group of patients at least partially selected for this type of treatment.
The present series consists of 52 boys, 25 with both testes undescended and 27 with only unilateral involvement. All were referred to the outpatient department for endocrine disorders at Kronprinsessan Lovisas hospital for sick children. They were all seen by the same physician during the years 1953 to 1960 and were with a few exceptions treated in the same manner during this period. Most of the patients had been observed for several years and practically all of them had been examined more than once before treatment was started.

The material may be considered as selected in the following sense. As far as possible cases with retractile testes, i.e. testes which are occasionally found in the scrotum or can be manipulated into this position, were excluded. Cases with a complicating hernia discovered before any treatment was instituted were also excluded. About half of the cases was otherwise chosen at random from patients seen at the surgical outpatient department. These cases were included in a previous investigation (Bergstrand & Qvist 1960). The remainder of the patients were referred from medical officers in the schools of Stockholm or from the surgical outpatient department. In these cases no evidence of mechanical obstruction to the descent of the testis had been found and there was no suspicion of an ectopic position, i.e. deviation of the testis from its normal path of descent.

The material is also selected in the sense that at least some of the cases who had been observed for a longer period and had shown a definite tendency to spontaneous improvement were excluded. The material comprises about half of the patients with undescended testes seen at the outpatient department for endocrine disorders during the above mentioned period.

The age when treatment was begun varied between 6 and 15 years. All patients received 600 international units of HCG intramuscularly twice weekly, in most cases for 12 weeks. In some cases the duration of treatment was 6 or 9 weeks. The total dose varied between 6600 and 17400 international units. A second course of injections was given to some patients after an interval of not less than half a year.

With 3 exceptions the time of observation after treatment was not less than a year and all cases were re-examined by the same physician. At the re-examination the size, consistency and position of the testis were evaluated and the results of the treatment considered as satisfactory when these criteria were found to be normal.

RESULTS

The results are shown in the tables and may be summarized in the following way. In 16 patients out of 52, treatment with HCG was followed by testicular descent. Expressed in terms of individual testes this means that out of 77 undescended testes 21 were brought into a satisfactory scrotal position by the hormonal treatment. In two boys, however, the result was only temporary and these patients had to be referred for operation. At the re-examination the descended testis was found to be smaller than normal in one patient and definitely atrophied in another. This means that the result could be regarded as satisfactory only in 10 patients or with regard to individual testes, in 16 cases.

An improvement of the testicular position was found in 6 additional boys, 4 of whom were later operated upon. In one patient descent occurred spon-
taneously at the age of 13 years, after treatment. At re-examination the testis was found to be considerably smaller than normal.

In 32 patients the hormonal treatment was followed by operation on one or on both sides. The total number of testes operated upon was 45. In one patient no testes could be identified at operation and in 3 additional cases one testis was missing. Eleven testes were found to be definitely smaller than normal in 8 patients (in 3 patients on both sides).

Table 1.
Results of treatment with chorionic gonadotrophin with regard to age.

<table>
<thead>
<tr>
<th>Age in years at the time of treatment</th>
<th>Total number of patients</th>
<th>Number of cases with descent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Unilateral cases</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 – 8</td>
<td>6</td>
<td>1(^1)</td>
</tr>
<tr>
<td>9 – 11</td>
<td>21</td>
<td>4(^2)</td>
</tr>
<tr>
<td>12 – 14</td>
<td>23</td>
<td>4</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>–</td>
</tr>
<tr>
<td>52</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>

\(^1\) Relapse after 1 ? year.
\(^2\) 2 testes hypoplastic at re-examination.
\(^3\) One case had a relapse on both sides after 2 years.

Table 2.
Results of treatment with chorionic gonadotrophin with regard to initial testicular position.

<table>
<thead>
<tr>
<th>Testicular position</th>
<th>Total number of patients</th>
<th>Number of cases with descent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Unilateral cases</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not palpable</td>
<td>21</td>
<td>2(^4)</td>
</tr>
<tr>
<td>Intra-canalicular</td>
<td>15</td>
<td>5(^5)</td>
</tr>
<tr>
<td>Extra-canalicular</td>
<td>16</td>
<td>2(^7)</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>9</td>
</tr>
</tbody>
</table>

\(^1\) Relapse after 1 ? year.
\(^2\) One testis hypoplastic.
\(^3\) One case had a relapse on both sides after 2 years.
DISCUSSION

The impression of the present investigation is, that compared with the results of orchiopexy, the treatment with HCG caused descent in rather a small number of patients. Good results, i.e. testis brought into the scrotum, are reported for an average of 70 to 80 per cent of all orchiopexies (e.g. Charny & Wolgin 1957; Snyder & Chaffin 1955; Gross & Jewett 1956; Hallman et al. 1957; Bergstrand & Qvist 1960) whereas the results of hormonal treatment have been rather variable. Earlier reports were very enthusiastic claiming descent in 50 to 100 per cent of the patients treated but later on the success has generally been much less encouraging and it seems reasonable to expect descent in about 20 per cent of the cases. The results of the present investigation seem to be in agreement with this figure. There are, however, more recent reports of selected materials in which a descent of over 60 per cent of undescended testes has been obtained (Fortuna 1958; Brunet et al. 1958). Why the results of treatment with chorionic gonadotrophin vary so much is not always easy to elucidate. Several factors must be taken into account; the dose administered, the duration of treatment, the age of the patient and probably most important the type of patients selected.

In the present material the dosage seems to be of the same order of magnitude as commonly used and it is unlikely that the relatively low incidence of descent can be ascribed to the amount of HCG given. It is possible but not very likely that the results might have been better if the treatment had been continued for a longer period. The number of patients is too small to allow of definite conclusions but most of the boys who reacted favourably to HCG did so within 6 or 9 weeks and after 8200 to 10400 IU. Furthermore, of 10 patients given a second course of injections only one showed descent.

The present material is, as previously stated, in several senses a selected one and is from many aspects comparable with that presented by Fortuna (1958) and by Brunet et al. (1958). A higher incidence of descent could thus have been expected. There are, however, two factors which may contribute to explain the discrepancy. It can be assumed and has in fact been shown by Brunet et al. (1958) that descent is more easily brought about the nearer the testis is to the scrotum. In the present material the number of nonpalpable testes, which usually means an unfavourable position, was very high.

In the material presented here the average age of the patients when treatment was started seems to be higher than in the comparable investigations referred to above. Only 15 patients were under the age of 11 (and of those 2 were almost 11). If the widely held belief that gonadotrophin only brings down testes which eventually come down spontaneously is correct, a lower incidence of descent must be expected when hormonal treatment is postponed until nearer puberty. A number of patients who possibly would have reacted
favourably to the treatment will under such circumstances be excluded, as spontaneous descent seems to occur after 11 years of age in the majority of these cases (Johnson 1939; Ward & Hunter 1960). Among the patients seen at the endocrine outpatient department during the period 1953–1960 there was as previously mentioned, a certain number not treated with HCG. When it was felt after repeated examinations at regular intervals that a spontaneous descent could be expected, no treatment was given. It is known that in eight of these patients the testes had descended when the re-examination of the present material was made. It is thus possible that if these patients had been treated with HCG and had been included in the material, the incidence of descent would have been higher. It is also possible that incidence would have been still higher if patients with suspected retractile testes had also been treated and included.

An important question is why gonadotrophin fails to bring down the testes in patients who show no evidence of mechanical obstruction when treatment is started. In the present series 32 patients had at the time of re-examination been operated upon. Only in 3 cases (with bilateral involvement) could no explanation be found at operation. In a few cases the testis was fixed by adhesions or had a definite ectopic position or was mechanically obstructed in some other way. Testicular aplasia was found in 4 cases and underdevelopment or atrophy in 8 cases. In the remaining patients operated upon, the presence of a congenital hernia was established (which was also the case in some of the patients with atrophy). Whether this hernia which must be a remnant of the foetal processus vaginalis can always be regarded as an absolute mechanical obstruction to the descent is difficult to decide. It seems, however, very likely that this abnormality in many cases, at least contributes to the failure of the testis to come down spontaneously or with the help of chorionic gonadotrophin.

The present investigation does not allow of any conclusions regarding the future fertility of patients successfully treated with HCG. Brunet et al. (1958) found, however, that only a relatively small percentage of patients with bilateral cryptorchism treated with gonadotrophin were infertile. This seems to be strong evidence that moderate doses of HCG can be administered without fear of causing permanent testicular damage. Whether it is justifiable to postpone treatment until near puberty, as was done in most cases of the present investigation, has been discussed in a previous paper (Bergstrand & Qvist 1960).

REFERENCES


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