FRACTURE OF THE ANTERIOR INFERIOR SPINE OF THE ILEUM

SPRINTER'S FRACTURE

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THE widespread development of athletics makes it desirable that certain injuries which occasionally occur in athletic activities be more generally known. In preparatory school boys such injuries are particularly likely to occur because of the non-union of various epiphyses in the age group to which they belong. Fracture of the anterior spines of the ileum would appear to be a very uncommon condition if one were to judge either by the scant mention it receives in the few text-books on fractures in which it is mentioned or by the scarcity of reports in the literature; there have been very few cases of this disorder reported in this country. The two cases reported here, however, occurred in a small community within seven months time.

Forty-eight cases of fracture of either the superior or inferior anterior iliac spine have been reported: Carp[1] in 1924 collected twenty-one cases; in 1933 Christopher[2] collected twenty-four more and recently Rothbart[6] has reported three more cases. The majority of these injuries occurred during rapid running (hence the term "sprinter's fracture"), but others have developed following kicking, turning backward while running, jumping, or slipping. Practically all the cases occurred in males from fifteen to twenty-three years of age, the latter being the age at which these epiphyses unite. The anterior-superior spine is more frequently fractured than the inferior; however, in the two cases reported here and in those of Pezcoller,[5] Rothbart[6] and Corlette,[3] the anterior inferior spine was involved.

Christopher[2] believes that one factor in producing this condition may be the tension exerted by inelastic muscles at the point of their attachment, and he advises that runners be well warmed up before participating in sprints.

The fracture of one of the anterior iliac spines will be suggested by sudden pain at the hip occurring during such an activity as running, with a subsequent development of pain in the inguinal region, pain and difficulty on attempting to flex the thigh, and pain over the affected spine. Symptoms of a mild vasomotor disturbance such as syncope or vomiting may occur. In the presence of fracture of the anterior superior spine the fragment may be found to be movable under the examining finger.

CASE I.—P. E., a sixteen-year-old schoolboy, was entered in a 220-yard dash May 4, 1933. Previous to that day he had never experienced any difficulty in running. He was well warmed up before the race and had run about 150 yards when he suddenly experienced sharp pain at his right hip, stumbled, and faltered to the finish. He then limped off the track, dropped onto the grass, vomited, and was unable to arise. On examination at the hospital, there was tenderness on palpation at the right groin and the patient was unable to flex his thigh. Roentgen examination showed a separation

of the anterior inferior spine of the right ileum (Fig. 1). The patient was put to bed with his knee flexed for six weeks, and was then allowed up and about on crutches for two weeks. At the end of another six weeks the function of that leg was perfectly normal.

CASE II.—D. H., a seventeen-year-old schoolboy, had occasionally noticed pain at his

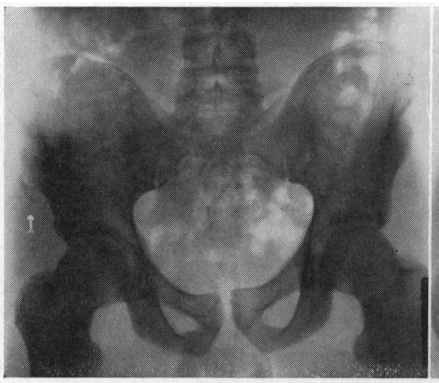

FIG. 1.—Roentgenogram taken of Case I directly after his injury.

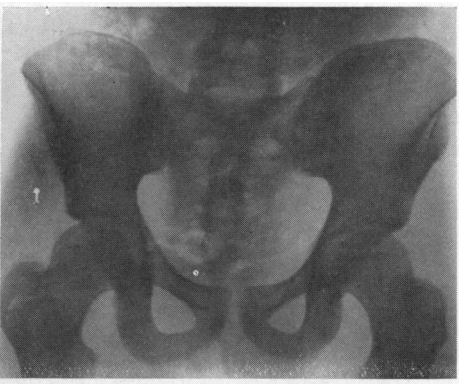

FIG. 2.—Roentgenogram taken of Case II directly after his injury.

right hip during the autumn track practice periods, but had always stopped running at the onset of pain and obtained relief within a few minutes. November 30, following an adequate warming-up period, he participated in a relay race. The start in this race was from the conventional upright position, with trunk rotated and right leg posterior. About fifty yards after starting he felt extreme pain at the right hip which hampered his stride greatly, but he was able to finish the race. At the finish he was obviously in great discomfort, and felt very faint. On examination there was exquisite tenderness at the right groin; the anterior superior spine was not tender or movable; the patient was unable to flex the thigh. A roentgenogram (Fig. 2) showed a fracture of the anterior inferior spine of the right ileum. The patient was put to bed with the knee flexed, and two days later a plaster spica was applied. The case was removed after four weeks and crutches were used for the next two weeks. Special exercises were given which rapidly overcame the atrophy of the thigh muscles. An X-ray examination (Fig. 3) January 12, 1934, showed extensive callus formation, and within ten weeks following the injury the function of the leg was again apparently perfectly normal.

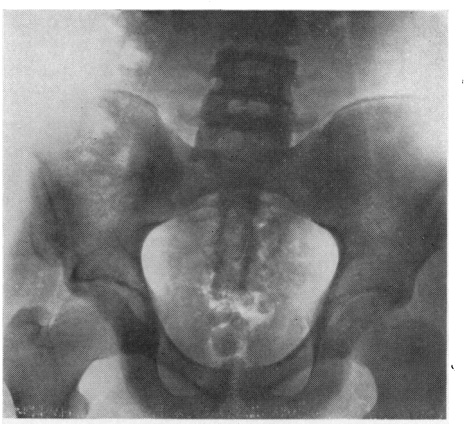

FIG. 3.—Roentgenogram taken of Case II seven weeks after his injury occurred. The formation callus may be seen.

Comment.—Two cases of fracture of the anterior inferior spine of the ileum are reported. Both of these injuries occurred during foot races and in both instances the boys were well warmed up before the start of the race. The symptoms and signs were very similar in these two cases: pain at the right groin, inability to flex the thigh and mild vasomotor disturbance. The

roentgenograms, which are reproduced, show the separation of the anterior inferior spine. It has been suggested that a cold muscle may be responsible for the extra strain at the epiphysis and may cause a fracture, but although that is no doubt occasionally an etiologic factor, the injury occurred in these two cases in well warmed muscles. The frequency with which this type of injury has occurred in runners suggests that one factor may be the over-development of the muscles attached to the epiphysis, which before its complete union is incapable of withstanding the strain put upon it. Eliason[4] believes that this fracture is frequently caused by a sudden forcible contraction of the rectus femoris muscle, such as occurs in sprinters at the start of a race. It may be significant that in a case reported by Christopher[2] and in Case II of this report, mention is made of the fact that for some weeks prior to their accident both boys had noted pain in the region at which the fracture subsequently occurred; the question might be raised as to whether a mild epiphysitis may have been present for some time prior to the accident and played a part in the subsequent fracture.

The histories of those two injuries suggests that many a "pulled tendon" occurring under similar circumstances in boys in this age group may be, in reality, an avulsion at an epiphysis. At any event, roentgenograms in such instances would be of interest. The principle of treatment employed is the relaxation of the flexors of the thigh for a period sufficiently long to allow union and healing of the separated epiphysis; this is best achieved by the maintenance of the knee in a position of ninety degree flexion by the proper adjustment of a Gatch bed or by pillows, methods which will prove more satisfactory than treatment in a plaster case.

SUMMARY.—(1) Two cases of fracture of anterior inferior spine of the ileum together with the signs and symptoms of this disorder are reported.

(2) The suggestion is made that this type of fracture is not as uncommon as the scarcity of reports would indicate.

(3) A few of the factors having an etiologic relationship to this disorder are mentioned.

(4) The desirability of using the roentgenogram in similar cases, rather than assuming that the injury in only a "pulled tendon," is suggested.

REFERENCES

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