Anterior Inferior Iliac Spine Avulsion Fracture in an Adolescent Runner: A Case Report

LU-WEN CHEN¹, SZU-ERH CHAN²

Anterior inferior iliac spine avulsion fractures are not common. We report a case in a 15-year-old boy who suffered from a sudden onset of pain on the right side of his groin and lower abdomen, accompanied by pain when raising his right leg, while running a race.

Because the chip fracture was overlooked initially on an ordinary radiograph, he was transferred to a pediatric surgeon who ruled out any surgical conditions leading to refractory pain. He then returned to the rehabilitation division, where an anterior inferior iliac spine avulsion fracture was found when the radiography report was reviewed. After conservative treatment, his pain subsided gradually and he became symptom-free two months later.

Key words: anterior inferior iliac spine, avulsion fracture, racing

Introduction

Although iliac crest contusions are not uncommon—especially during contact sports such as football¹—they are not commonly seen; they can occur from overuse of muscles, particularly when there is forced muscle stretching².

The three most common sites for avulsion sites are the ischial tuberosity of the hamstring attachment, the anterior inferior iliac spine of the rectus femoris attachment, and the anterior superior spine of the sartorius attachment.

Here we report a 15-year-old boy with an anterior inferior iliac spine avulsion fracture.

Case Report

A 15-year-old boy was brought to a local hospital when he complained of a sudden onset of pain to the right side of his groin and lower abdomen, accompanied by pain when he raised his right leg, while running a race.

The initial physical examination by a general surgeon showed tenderness over his right inguinal area and right lower abdomen without rebound pain. However, when a KUB and right hip lateral view plain radiograph (Figures 1 and 2) and abdominal sonogram were checked, a hip contusion was suspected. Therefore he was transferred to a rehabilitation setting.

The physiatrist performed three tests. A straight leg raising test elicited pain at 70 degrees on both sides. A manual muscle test showed right hip flexion was fair minus, and a Patrick test showed mild pain. However, a chip fracture that was overlooked on the radiograph, so acute abdominal muscle and hip flexor muscle strain was the initial diagnosis.

Under this impression, physical modalities
Fig. 1  KUB film reveals right AIIS avulsion fracture

Fig. 2  Right hip lateral film reveals right AIIS avulsion fracture
such as hot packing and interferential current were applied. The pain persisted and two days later he was referred to a pediatric surgeon, who excluded an acute abdominal surgical condition.

Three days later, the boy was brought back to the rehabilitation department, where the physiatrist reviewed the radiography report, and found an anterior inferior iliac spine (AIIS) avulsion fracture.

An orthopedic specialist suggested conservative treatment. The pain subsided and his right hip flexion gradually improved. There were no symptoms two months later.

A telephone follow-up one year later revealed that the patient remained symptom-free. However, because he did not return to hospital for follow-up, no further imaging was done.

Discussion

The diagnosis of groin pain in athletes is difficult because the anatomy of the region is complex and two or more injuries often coexist. The differential diagnosis includes intra-abdominal pathology, genitourinary abnormalities, referred lumbosacral pain and sports hernia, groin disruption, iliopsoas bursitis, stress fractures, avulsion fractures, nerve compression, and snapping hip syndrome. Early diagnosis and proper treatment are important to prevent these injuries from becoming chronic and potentially career-limiting.

The majority of avulsion injuries of the pelvis in adolescents occur during vigorous sports. They are often mistaken for muscle or tendon injuries. In the case described, there were several possible reasons for the physiatrist’s misdiagnosis. First, a physiatrist may not be well-trained in the subspecialty of pediatric orthopedics. Second, the physical examination was not complete—the Patrick test revealed mild pain, and an additional test, such as the psoas/obturator sign or the Ely test, should have been performed. If the former was positive, a surgeon could have done a re-evaluation; if the latter was positive, further image study of the rectus femoris could have been done and the AIIS avulsion fracture could have been found earlier. Third, the fragment on the KUB film was ignored.

Avulsion fracture of the AIIS in adolescents is an infrequent injury, and it occurs most commonly during sports activities. Avulsion of the AIIS is also less frequent than other pelvic avulsions, with an incidence of 14.8–22.1%. To the best of our knowledge, there are no studies estimating the rate of misdiagnosis of this condition.

Generally, displacement of the fragment in pelvic avulsions is no more than 1.5 cm, hence most avulsions can be managed non-operatively.

The length of the rehabilitative period varies, ranging from 3 weeks to 4 months, because it depends on factors such as the formation of a solid bony union and rehabilitation of the patient, the age of the patient, the pre-injury athletic level, and the degree of displacement of the fragment.

Some authors have suggested surgical treatment for those who have lateral femoral cutaneous nerve entrapment with more than 1.5 cm displacement or severe rotational deformity and also for those with a high level of professional involvement in sports.

Avulsion fracture of the anterior inferior iliac spine in adolescents is uncommon. We present this case to show that this type of fracture may not be recognized early enough, and thus physicians must carefully perform detailed physical examinations and correlate the clinical condition and radiological findings to avoid misdiagnosis.

References

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青少年跑者發生腸骨前下棘剝離性骨折：個案報告

陳律文¹  詹賜貳²

腸骨前下脊剝離性骨折(Anterior inferior iliac spine avulsion fracture)在臨床上並不常見。我們報告一位15歲的國中生，主訴一週前在參加一場學校運動會的短跑比賽時突然感到右下腹痛與右大腿背踇無力，初診時掛一般外科，經腹部超音波及X光檢查，沒有發現明顯異常，故懷疑為肌肉拉傷並轉介到復健科門診，復健科給予物理治療，但患者疼痛持續，故再轉至小兒外科以排除急性腸尾炎的可能性，小兒外科認為不像腸尾炎，故又轉回復健科。在回診時看到X光報告時才發現腸骨前下脊剝離性骨折，故又轉診至骨科門診，此時疼痛已減少，肌力與活動力正常，故採保守治療，二個月後患者完全康復。

青少年發腸骨前下脊剝離性骨折並不常見，臨床醫師應小心的實施理學檢查與對照X光影像以減少誤診的發生。

關鍵詞：腸骨前下脊，剝離性骨折，賽跑