

CASE REPORT

An accessory iliacus muscle: a case report

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Abstract

We present a case of an anomalous accessory iliacus muscle in the iliac fossa which gets originated from the iliac crest and inserting along with iliopsoas, and appear to compress the L4 root of femoral nerve. During the routine dissection of a male cadaver aged 58 years, we found an accessory iliacus muscle. The L2 and L3 nerve roots joined the L4 root distal to the accessory iliacus muscle. The L4 root of the femoral nerve supplied accessory iliacus muscle. Accessory iliacus muscle might cause tension on the femoral nerve resulting in referred pain to the hip and knee joints and to the lumbar dermatome L4. The clinical significance of this variant muscle and its importance in the femoral nerve entrapment has been discussed.

Keywords: accessory iliacus, femoral nerve entrapment, muscular variations, iliopsoas muscle.

☞ Introduction

The iliacus is a triangular sheet of muscle, which arises from the superior two-thirds of the concavity of the iliac fossa, the inner lip of the iliac crest, the ventral sacro-iliac and iliolumbar ligaments, and the upper surface of the lateral part of the sacrum. In front, it reaches as far as the anterior superior and anterior inferior iliac spine and receives few fibers from the upper part of the capsule of the hip joint. Most of its fibers converge into the lateral side of the tendon of the psoas major, and the muscles then insert together into the lesser trochanter, but some fibers are attached directly to the femur for about 2.5 cm. below and in front of the lesser trochanter. The anterior branches of the femoral nerve (anterior branches of L2–3) innervate this muscle [1].

The femoral nerve arises from the dorsal branches of the second to fourth lumbar ventral rami. It descends through the psoas major, emerging low on its lateral border and then passes between the psoas and iliacus, deep to the iliac fascia; passing behind the inguinal ligament. In the abdomen, the nerve supplies the iliacus muscle through its small branches [1].

The iliac fascia covers psoas and iliacus muscle from their origin to the insertion. In addition, the iliopsoas muscle complex gets inserted into the lesser trochanter of femur. There are many reports on interesting variations of the main part of this complex – the psoas major and iliacus muscle and the compression of largest nerve of the lumbar plexus the femoral nerve. The posterior division of the ventral rami of L2, L3, L4, and occasionally by L1 and/or L5 roots forms the femoral nerve. It descends in a groove between psoas

and iliacus, deep to the iliac fascia, to pass under the inguinal ligament and enter the thigh, where it gives terminal branches [2]. Several reports have described variant muscular slips or sheets forming longitudinal fascicles or wide bands associated with psoas and iliacus, but most of them are not related to the femoral nerve [3–9].

The iliopsoas tendon or muscle may be split by the femoral nerve [10–13]. Occasionally, a slip of the iliacus, called iliacus minor or the iliocapsularis, arises from the anterior inferior iliac spine and inserts either into the trochanteric line of the femur or into the iliofemoral ligament [14].

In this case, we report an anomalous accessory iliacus muscle in a position likely to compress the L4 root of femoral nerve.

☞ Material and methods

During the routine dissection of the posterior abdominal wall of a 58-year-old male cadaver, we observed a variation of femoral nerve formation with an accessory iliacus muscle on the left side.

☞ Results

The accessory iliacus muscle originated from the middle third of inner lip of iliac crest and was covered by a separate fascia, which was distinguishable from the iliacus fascia and the muscle. When traced distally the muscle inserted along with iliopsoas complex at the lesser trochanter (Figure 1).

The L2 and L3 roots of femoral nerve joined the L4 root distal to the accessory iliacus muscle. The L2 and

L3 roots were joined in the substance of psoas major muscle. The latter passed superficial to the accessory muscle and joined the L4 root to form the main trunk of femoral nerve.

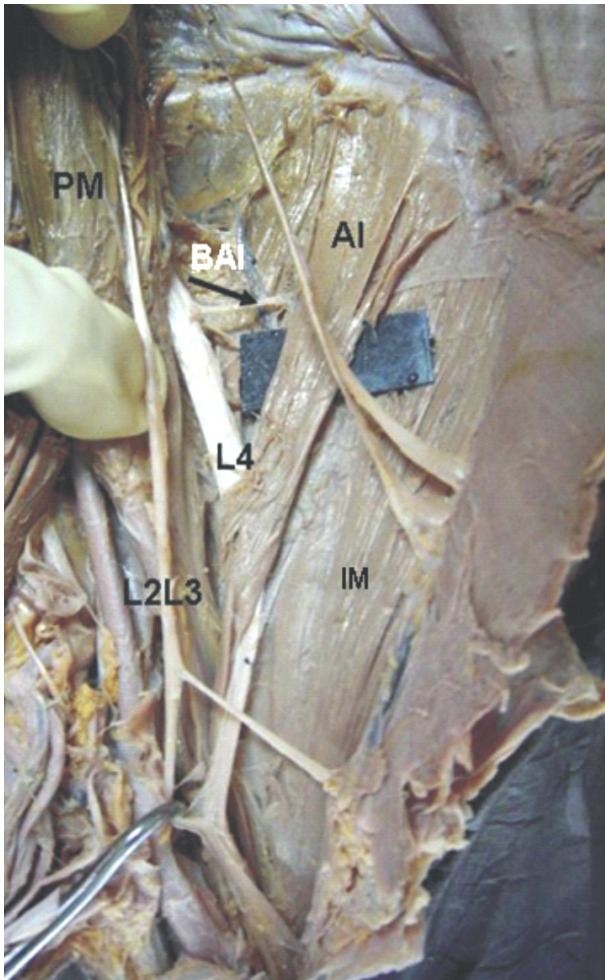


Figure 1– AI, accessory iliacus; BAI, branch to accessory iliacus; IM, iliacus muscle; PM, psoas major

The course of the femoral nerve was normal distal to the inguinal ligament. The accessory muscle was innervated by L4 root of the femoral nerve proximal to the compression.

Discussion

Many interesting and relatively rare variations, concerning the psoas major and the iliacus muscle have been described in the literature [15].

Cases of iliacus splitting into a deep and a superficial layer have been noted. Some authors mentioned that this splitting was accompanied by an abnormal course of the femoral nerve, which passed between the two layers [16, 17].

The description of a split iliacus might also be found in the articles about the femoral nerve with an abnormal course [12]. However, other authors reported this splitting without any additional information about the femoral nerve [10].

Spratt JD *et al.* (1996) and Vázquez MT *et al.* (2007) [18, 19] also have reported accessory iliopsoas muscle with splitting of femoral nerve.

Muscular variations, such as those mentioned above, most probably do not cause any considerable disturbance in the lower limb movements. The accessory muscles may be seen as interesting findings in patients during laparotomy and enrich the possibilities in the differential diagnosis on CT imaging of the iliopsoas compartment [20]. Mainly because of the frequent co-existence with an unusual course and formation (splitting) of the femoral nerve, these muscular variations are of a great importance to clinical practice.

In the cases of femoral nerve paralysis of femoral nerve, neuropathy caused by iliac hematoma after anticoagulant treatment [21–25] or trauma [26–28] or vessel catheterization [29] the existence of some variant muscles, which may increase the nerve compression, must be born in mind.

A variant muscular slip, belonging to the psoas major or the iliacus muscle, or even an accessory muscle described in this case report may cause tension of the femoral nerve and therefore should be suspected in patients with referred pain to the hip and knee joints and to the lumbar dermatomes [18].

Conclusions

Accessory iliacus muscle described in the present case report might cause tension on the femoral nerve resulting in referred pain to the hip and knee joints and to the lumbar dermatome L4.

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Received: April 1st, 2008

Accepted: May 8th, 2008