



Unilateral Agenesis of Iliopsoas Muscle

Abdelhakim Algheryani¹ Sarah Muftah Younis² Ahmed M. Duma³

¹ Department of Radiology, Faculty of Medicine, Benghazi University, Benghazi, Libya

² Department of Radiology, Al-Hawari General Hospital, Benghazi, Libya

³ Department of Neurosurgery, Al-Hawari General Hospital, Benghazi, Libya

Address for correspondence Sarah Muftah Younis, Department of Radiology, Al-Hawari General Hospital, Benghazi, Libya (e-mail: Sarahaljazwi@gmail.com).

Libyan Int Medical Univ J 2024;9:49–51.

Abstract

Keywords

- agenesi
- iliopsoas muscle
- MRI
- the ili
- the major psoas
- the minor psoas

Agenesis of the psoas minor muscle is very common as it can be absent in approximately 56% of the population. Moreover, previous three case reports described hypoplasia of the psoas muscle. However, our case had complete agenesis of the three iliopsoas muscle components on the right side. A 26-year-old woman presented with right-side weak hip flexion that had persisted for 2 years. Magnetic resonance imaging revealed complete agenesis of the right iliopsoas muscle, and no spine pathology was detected. Radiologists should put agenesis of the iliopsoas muscle into consideration in patients presented with weak hip flexion especially when no spine pathology is detected. Follow-up is advised to study the long-term effects of iliopsoas muscle agenesis. To the best of our knowledge, we believe that this is the first report in the general literature.

ملخص المقال باللغة العربية

عدم تكون عضلة الحرقفة القطنية من جانب واحد

المؤلفون: عبد الحكيم الغرياني¹، سارة مفتاح يونس²، أحمد دومة³.

¹ قسم الأشعة، كلية الطب جامعة بنغازي، ² قسم الأشعة، ³ جراحة المخ والأعصاب، مستشفى الهواري العام، بنغازي، ليبيا.

المؤلف المسؤول: سارة مفتاح يونس، البريد الإلكتروني: sarahaljazwi@gmail.com

يُعتبر عدم تكون عضلة الحرقفة القطنية الصغرى حالة شائعة، حيث قد تكون غائبة في حوالي 56% من السكان. وقد تم توثيق ثلاث حالات سابقة تعاني من نقص تنسج في هذه العضلة. ومع ذلك، فإن الحالة المعروضة في هذا البحث تعكس عدم تكون كامل لمكونات عضلة الحرقفة القطنية الثلاثة على الجانب الأيمن. تمثل الحالة امرأة تبلغ من العمر 26 عامًا تعاني من ضعف في ثني الورك في الجانب الأيمن لمدة عامين. أظهر التصوير بالرنين المغناطيسي عدم تكون كامل لعضلة الحرقفة القطنية اليمى، دون وجود أي أمراض في العمود الفقري. يجب على أخصائي الأشعة أخذ عدم تكون عضلة الحرقفة القطنية بعين الاعتبار لدى المرضى الذين يعانون من ضعف في ثني الورك، خاصة عندما لا تُظهر الفحوصات أي مشاكل في العمود الفقري. يُوصى بمتابعة الحالات لدراسة التأثيرات طويلة المدى لعدم تكون هذه العضلة. وفقًا لمعلوماتنا، نعتقد أن هذا هو التقرير الأول من نوعه لهذه الحالة في الأدبيات الطبية. **الكلمات المفتاحية:** عدم التخلق، العضلة الحرقفية القطنية، التصوير بالرنين المغناطيسي، العضلة الحرقفية، العضلة القطنية الكبرى، العضلة القطنية الصغرى.

received

June 20, 2024

accepted after revision

October 15, 2024

article published online

November 26, 2024

DOI <https://doi.org/10.1055/s-0044-1793835>.

ISSN 2519-139X.

© 2024. The Author(s).

This is an open access article published by Thieme under the terms of the Creative Commons Attribution License, permitting unrestricted use, distribution, and reproduction so long as the original work is properly cited. (<https://creativecommons.org/licenses/by/4.0/>)

Thieme Medical and Scientific Publishers Pvt. Ltd., A-12, 2nd Floor, Sector 2, Noida-201301 UP, India

Introduction

The iliopsoas muscle is composed of three muscles: (1) major psoas, (2) minor psoas, and (3) iliacus muscle. The origin of the iliopsoas muscle is the transverse processes of vertebrae L2–L4 (or L1–L3) and it inserts into the lesser trochanteric tubercle. The short collateral branches of the lumbar plexus (L1–L3) innervate the psoas major and minor muscles, whereas the iliacus muscle is innervated by the femoral nerve or terminal nerve of the lumbar plexus (L1–L4). Its prime function is flexion and external rotation of the hip joint.^{1,2}

Agene s of the psoas minor is very common; according to reports, it has a 56% chance of being congenitally absent. Moreover, there have been few reports about unilateral hypoplasia of the psoas muscle.^{3,4}

However, no reports were to be found describing a complete agene s of the iliopsoas muscle. To the best of our knowledge, we believe that this is the first report in the general literature.

The purpose of this case report is to discuss the case of a 26-year-old woman who presented with right-side weak hip flexion caused by unilateral complete agene s of the iliopsoas muscle.

Case Presentation

A 26-year-old woman presented to the outpatient clinic complaining of difficulty in elevating her right leg during walking for 2 years. Her past medical history was unremarkable. Her physical examination revealed left hip flexion weakness. Neurological examination was normal. Laboratory data were within normal range. Since peripheral neuropathy was suspected, a nerve conduction study was performed; however, it was normal.

Next the patient underwent a whole spine magnetic resonance imaging (MRI) scan to identify any possible spine pathology that could explain her complaint, which showed a normal lumbosacral vertebral body height and alignment. There was no central canal or foraminal compromise, and no disk bulge or herniation was noted (►Fig. 1).

However, a complete agene s of the right iliopsoas muscle was incidentally detected (►Fig. 2).

Along with agene s of the right iliopsoas muscle, there was disuse atrophy and fat infiltration of the ipsilateral paraspinal (►Fig. 3).

No other disease that could have caused this anomaly in our patient was present; no history of trauma or muscle abscess was observed.

Discussion

The iliopsoas muscle consists of three muscles, the psoas major and minor, and the iliacus muscle arising from the transverse processes of the L2–L4 (or L1–L3) vertebrae and it inserts directly into the lesser trochanteric tubercle process- es. The short collateral branches of the lumbar plexus (L1–L3) innervate the psoas major and minor muscles, whereas the

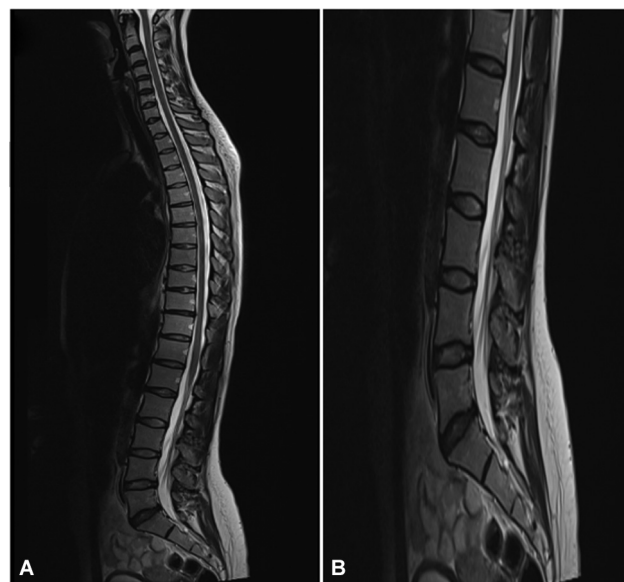


Fig. 1 Spinal sagittal T2-weighted magnetic resonance imaging. (A) Sagittal whole spine. (B) Sagittal lumbosacral spine. There was normal lumbosacral vertebral body height and alignment, and there was no central canal or foraminal compromise, no disk bulge, or herniation.



Fig. 2 Lumbar level coronal T2-weighted magnetic resonance imaging. Left psoas and iliacus muscles are present (white arrows). Complete absence of psoas and iliacus muscle on the right side (complete agene s).

iliacus muscle is innervated by the femoral nerve or terminal nerve of the lumbar plexus (L1–L4). The primary function of the iliopsoas muscle is to flex and externally rotate the hip joint, playing a crucial role in maintaining the strength and integrity of the hip joint. It is necessary for proper standing or sitting lumbar posture as well as for proper walking and running.²

The psoas minor is a muscle arising from the vertebral bodies of T12 and L1. Agene s of this muscle is very common as it can be absent in approximately 56% of the population.³ Moreover, three case reports described unilateral hypoplasia

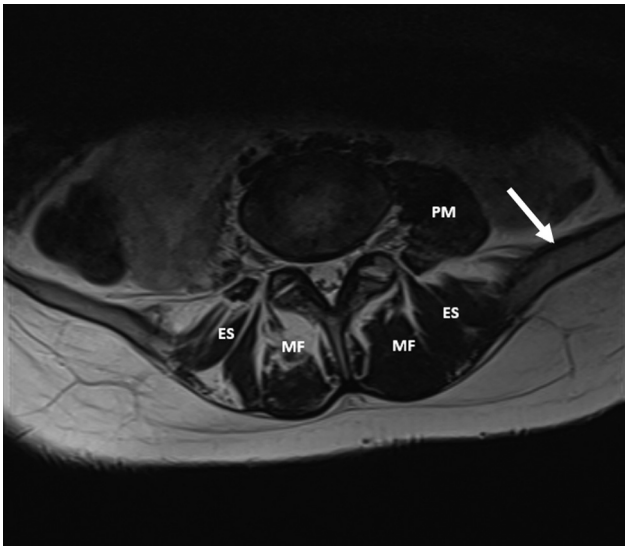


Fig. 3 Lumbar level axial T2-weighted magnetic resonance imaging. Atrophy and fat infiltration of the right paraspinal muscles. The white arrow indicates the iliopsoas muscle. ES, erector spinae; MF, multifidus; PM, psoas major.

of the psoas muscle, and the clinical picture ranged from patients being asymptomatic to those suffering from low back pain. Degenerative changes of the spine with scoliotic posture and hyperextension of the left hip joint were also described, and the case reports concluded that these changes were attributed to unilateral muscle hypoplasia considering the function of the muscle in stabilizing the spine and in flexing the hip joint.⁴ However, our case had complete agenesis of the three iliopsoas muscle components on the right side. There was no apparent pathological etiology explaining this finding. Our patient had complaints of weakness in the elevation of the right lower limb while walking. Examination revealed weak flexion of the right hip. MRI revealed complete agenesis of the right iliopsoas muscle; there were no degenerative changes in the spine. However, a thorough musculoskeletal screening may be helpful in detecting the long-term consequences of iliopsoas agenesis. No spine pathology could explain the right hip's weak flexion. No other disease that could have caused agenesis of the iliopsoas muscle in our

patient was present. Further studies are needed to extrapolate the real prevalence of iliopsoas muscle agenesis and its consequences on the quality of life. The understanding of the actual prevalence of the condition and its impact on daily functioning could be useful insights for the management of the patients with this condition and in the development of particular therapeutic strategies.

Conclusion

In this study, we presented the case of a patient with a complaint of weak elevation of the right leg who was diagnosed incidentally with agenesis of the right iliopsoas muscle while undergoing MRI for spinal abnormalities. This condition was not caused by any disease and did not lead to degenerative changes in the spine. No spine pathology explaining her symptoms was detected. Radiologists should consider agenesis of the iliopsoas muscle in patients with weak hip flexion, especially when no spine pathology is detected. Follow-up is advised to study the long-term effects of iliopsoas muscle agenesis. Further studies are necessary to extrapolate the real prevalence of iliopsoas muscle agenesis and its consequences on the quality of life.

Funding

None.

Conflict of Interest

None declared.

References

- 1 Smith HS, Dubin A. Physical examination of the patient with pain. In: Argoff CE, McCleane G, eds. *Pain Management Secrets*. 3rd ed. Philadelphia, PA: Mosby; 2009:32–41
- 2 Bordoni B, Varacallo M. *Anatomy, Bony Pelvis and Lower Limb, Iliopsoas Muscle*. Treasure Island, FL: StatPearls Publishing; 2023
- 3 Singh D, Agarwal S. Morphological study of psoas minor muscles with embryological basis and clinical insights. *J Clin Diagn Res* 2021;15(04):AC10–AC14
- 4 Akyol M, Çiçekçi M. Unilateral hypoplasia of distal part of the psoas muscle: an incidental rare anomaly. *Türkiye Klinikleri Case Rep* 2021;29(02):101–104