Role of Multidetector Computed Tomography in Diagnosis of Obturator Hernia: Case Report

Obturator Herni Tanısında Çok Kesitli Bilgisayarlı Tomografinin Rolü

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ABSTRACT Obturator hernia is a very rare disorder with high rates of mortality which is difficult to diagnose. Increased abdominal pressure is known to be important in the etiology of this condition and women are more likely to be affected. Because of suspicious clinical manifestation and laboratory findings the diagnosis delays. Therefore radiological diagnostic modalities became important. Multidetector computed tomography (MDCT) is the most useful radiological modality in the diagnosis of obturator hernia. MDCT has an increased spatial resolution and with isometric reconstruction technique it supplies more realistic images and accurate diagnostic information. In this case we aim to show the importance and role of MDCT in the diagnosis of this rare condition.

Key Words: Multidetector computed tomography; hernia, obturator

ÖZET Obturator herni, intestinal yapıların obturator kanal boyunca herniasyonu ile meydana gelen nadir bir durumdur. Tanı zorluğu nedeniyle mortalitesi yüksektir. En önemli etyolojik faktör artmış intraabdominal basınçtır. Kadınlarda daha sık görülür. Klinik ve laboratuar bulgularının tipik olmaması nedeniyle genellikle geç tanı alır. Bu nedenle, erken tanı alabilmesi için radyolojik tanı modaliteleri önem taşır. Çok kesitli bilgisayarlı tomografi (ÇKBT), obturator herni tanısında en kullanışlı yöntemdir. ÇKBT; yüksek uzaysal rezolüsyon, 3 boyutlu rekonstrüksiyon teknikleri ve izometrik voksel değerlerinin elde edilebilmesi ile daha gerçekci görüntüler sağlar ve tanıyı kolaylaştırır. Biz bu olgumuzda nadir bir durum olan obturator herni tanısında ÇKBT'nin önemli rolünü göstermayi amaçladık.

Anahtar Kelimeler: Çok kesitli bilgisayarlı tomografi; herni, obturator

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Obturator hernia (OH) is a very rare disorder with high rates of mortality which is difficult to diagnose. Surgical management is the only way to treat this condition.[1] Several radiological modalities are being used for diagnosis of OH. Multidetector computed tomography (MDCT) is the most useful radiological modality in the diagnosis of OH with high spatial resolution and 3D reconstruction option. The accuracy of MDCT is high. MDCT has isometric reconstruction technique and supplies more realistic images. In this case we aim to show the importance and role of MDCT in the diagnosis of a surgically proven OH.

CASE REPORT

A 62-year-old man was admitted to emergency service with nausea, vomiting, and acute onset of abdominal pain. The patient's history did not contain any hints of diseases. There was no spesific clinical and laboratory findings and no history of drug usage. On physical examination, the patient's time, personal and place orientation was normal. Skin colour was normal and the skin was well hydrated. Blood pressure was measured 120/80 mmHg and axillary temperature was 37.8°C. The patient's heart rate was 85/min and breath rate was 18/min. Each hemithorax was participating the respiration equally. We detected abdominal distension, defence and rebound. Laboratory findings showed increased white blood cell levels and C-reactive protein and ESR was also elevated. The patient was referred to our clinic for computed tomography examination.

MDCT was performed with 16-slice CT scanner (Somatom Sensation 16, Siemens, AG, Erlanger, Germany). Gantry rotation time was 0.5 sec. A tube voltage of 140 kVp and a tube current between 100 and 380 mA were used depending on the weight of the patient. Oral contrast media was not used. Intravenous contrast media protocol involved 2 mg/kg of iopromide (Ultravist 300, Schering AG. Berlin, Germany) injected by an automated injector (CT Injector; Ulrich Medical, Ulm-Jungingen, Germany) at a rate of 2 mL/s. According to our standart abdominal CT protocol, 10 mm sections were acquired with increments of 8 mm.

Axial contrast enhanced CT images showed an intestinal structure herniating through the obturator channel, between external and internal obturator muscles (Figure 1). Coronal images also show the distended small intestine and herniated small bowel loops (Figure 2). Finally a diagnosis of OH was made radiologically and the patient underwent surgical management. The patient was discharged from the hospital with full recovery.

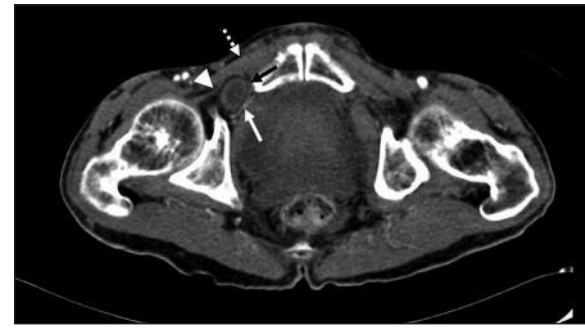

FIGURE 1: Axial contrast enhanced CT image shows herniated small bowel (black arrow) through the obturator channel. Intestinal structure herniates between external (arrow head) and internal obturator muscles (white arrow). Dotted arrow shows pectineus muscle.

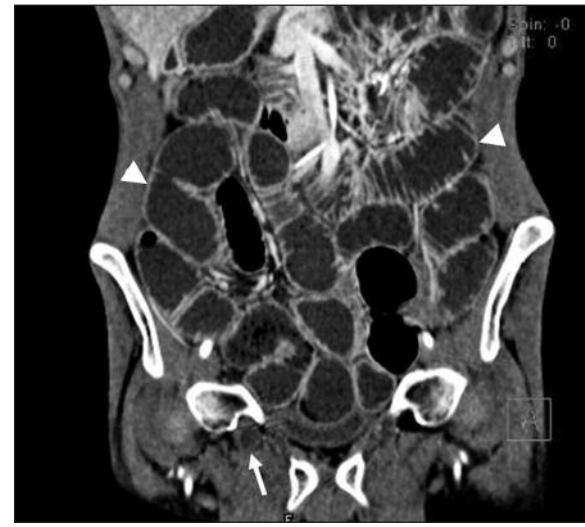

FIGURE 2: Coronal reformated CT image shows herniated small bowel (white arrow) . Dilated intestinal structures (arrow heads) are also visible.

DISCUSSION

In 1724, Arnaud de Ronsil first described the OH, and in 1851 Henry Obre repaired OH successfully for the first time.[2,3] Obturator hernia is rare manifestation in which women are more likely to be affected with a male to female ratio of 1/6. OH is frequently seen in old emaciated women between the age of 70-90.[1,2] Because of this, it is also called little old lady's hernia.[4] Obturator herniation occurs when intestinal structures herniates through obturator channel. Obturator channel is anterosuperior part of obturator foramen. Obturator foramen is the largest foramen in the body and is covered by a fibrous osseous membrane.[1] Obturator channel contains obturator nerve and vascular structures. The channel is 2-3 cm in lenght and 1 cm in width.[1,2] It contains fat that filles the channel and allows no space for hernia. In the herniated channel this fat tissue disappears or becomes thin.

Obturator hernia is the most frequently seen pelvic floor hernia.[5] Increased abdominal pressure causes compression and volumetric loss of fatty tissue. This results with obturator herniation. This condition is usually seen in the old women and pregnants. That is why we see obturator hernia mostly in women.

Three types of OH have been described.[1,6] In the first type, herniation occurs between pectineus muscle and obturator externus muscle. Second type occurs between superior and middle fasiculi of external obturator muscle. The third one occurs between external and internal obturator muscles. First type is the most frequent and the third type is less. In our case, small bowel structures were herniated between external and internal obturator muscles consistent with the third type.

OH is a hazy clinical manifestation, thus having some difficulties in the diagnosis. Potential symptoms are nausea, vomiting, abdominal pain and constipation. On physical examination, defence and rebound may present. Howship-Romberg sign shows herniated intestinal structures into obturator channel that compresses obturator nerve causing pain and parestesia in the medial aspect of thigh.

A recently study showed that type I OH is more often presented with Howship Romberg sign by using MDCT. This study showed that 10 cases (67% of patients with type I OH) and 6 cases (30% of patients with type II OH) manifested with Howship-Romberg sign.[7]

Hanington-Kiff sign is the absence of adductor reflex of medial thigh.[8] In comparison with Howship-Romberg sign, Hanington-Kiff sign is more specific for OH.[1] Due to difficulties in diagnosis, OH has high mortality rates. Radiological modalities such as CT, ultrasonography, and magnetic resonance imaging are able to diagnose OH correctly. CT is now regarded as the standard diagnostic modality in the diagnosis of this condition.[8] Abdominal X-ray is not useful except for showing the air-fluid levels. Some of the studies suggest ultrasonography as a useful diagnostic modality, but it has some limitations. Because of the lesion's deep location, it is difficult to see clearly with ultrasonography.[1,9]

MDCT is the most useful radiological technique for the diagnosis of OH. CT was first used by Meziane et al. for the diagnosis of OH in 1983.[10] The most common finding is low attenuated mass between pectineus and external obturator muscles. In some cases the low density mass may contain air and apparently different from the opposite side.[11] MDCT has increased spatial resolution and gives more diagnostic information. With isometric reconstiructiontechnique, MDCT supplies more realistic images. Owing to isometric reconstruction property of MDCT, reformat images almost have resolution as same as axial images.

A retrospective study which assess 30 patients with OH showed that, in 10 patients who were evaluated with MDCT, MDCT could detect the disease in 9 patients before surgery. And in these 10 patients, postoperative complications developed less frequently when compared to remaining 20 patients which MDCT was not used in diagnosis.This study emphasizes the importance of MDCT in diagnosis of OH and shows decreased postoperative complications by using MDCT.[12]

Because of high mortality rates of obturator canal herniations, an urgent operative approach should be considered.[13] In conclusion, because CT has wide avaliability with short acquisition times, it plays an important role in establishing a prompt diagnosis in the acute setting. OH is an important cause of ileus and establishment of a prompt diagnosis and treatment are essential for a successful outcome.

REFERENCES

1. Chun-Lin Huang, Yu-Bun NG, I-Li Lin, Wen-Pin Chen, Joseph-Hang Leung. Obturator Hernia- usefulness of CT scan in diagnosis. Chin J Radiol 2005;30:263-7.
2. Mantoo SK, Mak K, Tan TJ. Obturator hernia: diagnosis and treatment in the modern era. Singapore Med J 2009;50(9):866-70.
3. Hsu CH, Wang CC, Jeng LB, Chen MF. Obturator hernia: a report of eight cases. Am Surg 1993;59(11):709-11.
4. Bjork KJ, Mucha P Jr, Cahill DR. Obturator hernia. Surg Gynecol Obstet 1988;167(3):217-22.
5. Kjossev KT, Losanoff JE. Gangrenous appendicitis in a strangulated obturator hernia. South Med J 2003;96(10):1042-3.
6. Mercader VP, Fein DA, Gembala-Parsons RB, Caroline DF. CT of an obturator hernia. J Comput Assist Tomogr 1995;19(2):330-2.
7. Karasaki T, Nakagawa T, Tanaka N. Obturator hernia: the relationship between anatomical classification and the Howship-Romberg sign. Hernia 2013 Mar 13. Doi 10.1007/s10029-013-1068-9
8. Yokoyama Y, Yamaguchi A, Isogai M, Hori A, Kaneoka Y. Thirty-six cases of obturator hernia: does computed tomography contribute to postoperative outcome? World J Surg 1999;23(2):214-6; discussion 217.
9. Otsuka Y, Harihara Y, Nakajima K, Furushima K, Konishi T. A case of bilateral obturator hernias; feasibility of combination study of computed tomography and ultrasonography to make diagnostic and therapeutic strategies. Hepatogastroenterology 2003;50(52):1054-6.
10. Nishina M, Fujii C, Ogino R, Kobayashi R, Kumada K, Yamane K, et al. Preoperative diagnosis of obturator hernia by computed tomography. Semin Ultrasound CT MR 2002;23(2):193-6.
11. Ijiri R, Kanamaru H, Yokoyama H, Shirakawa M, Hashimoto H, Yoshino G. Obturator hernia: the usefulness of computed tomography in diagnosis. Surgery 1996;119(2):137-40.
12. Nasir BS, Zendejas B, Ali SM, Groenewald CB, Heller SF, Farley DR. Obturator hernia: the Mayo Clinic experience. Hernia 2012;16(3):315-9.
13. Tiryaki B, Gelengeç F, Kocabay G, Alış H. An unusual cause of acute abdomen: Obturator canal herniation of appendix: Case report. Turkiye Klinikleri J Med Sci 2009;29(6):1740-2.