

DETECTING THE DIAGNOSIS AND PREVALENCE OF ASYMPTOMATIC UMBILICAL HERNIAS WITH ROUTINE ABDOMINAL MULTIDETECTOR COMPUTED TOMOGRAPHY

RUTİN ABDOMİNAL MULTİDEDEKTÖR BİLGİSAYARLI TOMOGRAFİ ÇEKİMLERİNDE ASEMPTOMATİK UMBLİKAL HERNİ TESPİTİ ve GÖRÜLME ORANI

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ABSTRACT

Umbilical hernias are part of abdominal wall hernias. Multidetector computed tomography (MDCT) is an accurate radiologic imaging technique for detecting asymptomatic umbilical hernias. The goal of this study to detect the prevelance of asymptomatic umbilical hernias with routine abdominal CT. Materials and Methods: We examined all patients who underwent abdomen MDCT scan at Afyonkarahisar Health Sciences University from 01.01.2020 to 01.03.2020 retrospectively. We excluded patients with known abdominal wall surgery or trauma and symptomatic umbilical hernias. Age, gender and diameter of fasia defect were noted. Results: MDCT images of 1833 patients were examined. Umbilical hernia was detected in 95 patients (5.1%). 70 of 95 patients were asymptomatic (Ages:22-85(mean 55.3); 29M, 41F). Asymptomatic umbilical hernia was found in 3.8% of 1833 patients and 73.6% of umbilical hernias. Diameter of fasia defect was between 4-16 mm(mean 9.1). Hernia sac was containing only intraabdominal fat tissue in 59 patients and both bowel segments and fat tissue in 11 patients. There was no incarceration in herniated bowel segments. None of the patients had evidence of ileus. Conclusion: Abdominal hernias are common problematic disorders for both clinicians and radiologists. Umbilical hernias are occured as protrution of peritoneal sac through the defect or weakness of abdominal wall muscle layers. It may occur congenital or acquired. Acquired umbilical hernias are seen in adults, don't disappear spontaneously and have high risk for incarceration. They are seen ten times more frequent in females. Pregnancy, ascites, obesity, liver failure are risk factors. Some of the umbilical hernias are asymptomatic. In our study we found high ratio as 73.6%. It is important to diagnose the umbilical hernias before they become symptomatic and cause incarceration. Physical examination is important for diagnosing umbilical hernia. But it is not successful for obese patients or small sacs. MDCT makes the diagnose earlier and prevents complications.

Keywords: Herniation, umbilical, MDCT, abdominal wall

1. INTRODUCTION

Abdominal hernias are common and problematic disorders. They may cause complications if they are not diagnosed earlier. They are divided into two main subgroups as internal and external hernias. A loop of bowel enters an orifice bounded by visceral peritoneum in internal hernias. Paraduodenal, pericecal, intersigmoid, transmesenteric hernias and herniation through the foramen of winslow are kinds of internal hernias (Zarvan, 1995). External hernias has 3 main subgroups as inguinal, femoral and ventral. Kinds of ventral hernias are divided into subgroups such as epigastric, hypogastric, umbilical, paraumbilical, spigelian, incisional hernias (Diego, 2005; Zarvan, 1995).

Most common type of ventral hernias is umbilical hernias. They may cause bowel obstruction, strangulation or incarceration (Diego, 2005). They are generally small and asymptomatic. Making diagnose is difficult in obese or postoperative patients. In these patients, making physical examination and distinguishing a hernia from abdominal wall seroma, hematoma or abscess (Højer, 1997; Jaffe, 2005).



Several imaging modalities are performed to diagnose suspected hernias. Ultrasonography and multidetector computed tomography (MDCT) are the most common imaging techniques that are used for diagnosis of hernias. CT can detect the hernia and its contents accurately and distinguish a hernia from its mimics (Diego, 2005; Ianora, 2000; Jaffe, 2005).

The purpose of this study to detect the prevelance of asymptomatic umbilical hernias with routine abdominal MDCT.

2. MATERIALS and METHODS

2.1. Patients

MDCT images of 1833 patients were examined retrospectively who underwent abdomen CT scan at Afyonkarahisar Health Sciences University from 01.01.2020 to 01.03.2020. Patients with known abdominal wall surgery or trauma were excluded. Symptomatic umbilical hernias causing bowel obstruction, strangulation, incarceration were excluded. Asymptomatic umbilical hernias were included. Age, gender of patients and the transverse diameter of fasia defect were noted. All patients gave written informed consent.

2.2. CT Protocol

Abdominal MDCT examinations were performed by a CT scanner (Toshiba Aquilion (80x2), Otawara, Japan). 572 of 1833 MDCT was performed without using contrast agent due to suspected urinary stone disease. Intravenous contrast agent injection was performed during MDCT scanning in 1261 of 1833 patients. 1-2 ml/kg iodinated nonionic contrast agent was given with an iodine concentration of 300 mg/cc. MDCT images were obtained during patient breath holding. Scanning parameters were: slice thickness 2 mm, reconstruction index 1 mm, tube voltage 120 kVp, pitch 0,75. From diaphragmatic dome to the end of pelvis MDCT scan was performed. Coronal and sagittal multiplanar reconstructed (MPR) images were obtained from axial CT images. All the images were transferred to a picture archiving communication system (PACS) workstation and were evaluated by the same 12-year-experienced radiologist.

3. RESULTS

CT images of 1833 patients were examined. Umbilical hernia was detected in 95 patients (5.1%). Ages were between 22 and 85 (mean 55.3); 29 patients were male and 41 were female. 70 of 95 patients were asymptomatic. Asymptomatic umbilical hernia was found in 3.8% of 1833 patients and 73.6% of umbilical hernias. The transverse diameter of fasia defect was between 4-16 mm (mean 9.1). Hernia sac was containing only mesenteric or omental fat tissue in 59 patients (Figure 1, Figure 2, Figure 3) and both bowel segments and fat tissue in 11 patients. None of the patients had signs of bowel obstruction (ileus), stangulation or incarceration.









Fig.1A



Figure 1: 66-year-old male patient; axial (A) ve sagittal MPR (B) MDCT images demonstrate fasia defect of umbilical region and herniaton of intraabdominal fat tissue (arrows).



Fig.2A





Figure 2: 65-year-old male patient; axial (**A**) ve sagittal MPR (**B**) MDCT images show fasia defect and herniation of intraabdominal fat tissue (arrows) compatible with umbilical hernia. There is minimal free fluid in the hernia sac.



Fig.3A





Figure 3: 52-year-old female patient; axial (A) ve sagittal MPR (B) MDCT scans show fasia defect and umbilical hernia. Hernial sac contains abdominal fat tissue (arrows).



4. DISCUSSION

Umbilical hernias occur as protrution of peritoneal sac through the defect or weakness of abdominal wall muscle layers in the region of umbilicus. They may occur congenital or acquired. In fetal life, through the umbilicus, abdominal contents herniate and by the tenth week of embryonic life they return back to abdomen. Omphalocele occurs due to defect in this process. Small umbilical hernias may be seen in infants according to incomplete process and they generally close spontaneously (Zarvan, 1995). Acquired umbilical hernias are seen in adults and they do not reduce spontenously. They are ten times more common in females than males. The risk factors are multipl pregnancies, obesity, ascites, liver failure, large intraabdominal masses (Ianora, 2000; Zarvan, 1995).

Most of the umbilical hernias are asypmtomatic. In our study, 73.6% of umbilical hernias were asymptomatic. But they may become symptomatic, cause acute complications and emergent surgeries. Strangulation, incarceration and small bowel obstruction are the most important complications. Compromised blood supply causes ischemia and strangulation. Irreductable hernia sac causes incarceration. Small bowel obstruction causes ileus. These complications have high prevalence in umbilical hernias (Diego, 2005; Ianora, 2000).

They may become fatal if the complications develop. Most frequent reason for emergent surgeries in the United States are complications of external hernias (Diego, 2005). Umbilical hernias are the second most often surgically repaired hernias in the United States (Aguirre, 2004). Rapid diagnosis is important to prevent greater morbidity (Diego, 2005; Yu CY, 2004; Killeen, 2000). They have to be repaired electively to prevent complications (Courtney, 2003; Diego, 2005).

Prompt diagnose and preventing complications are crucial. Diagnosis is usually made at physical examination. But if the patient is asymptomatic or sac is small and patient is obese, physical examination is not enough for diagnose. Imaging modalities such as ultrasonography and MDCT can be performed. Ultrasonography is practitioner dependent and may not suffice in obese patients. MDCT shows both intrabdominal organs and abdominal wall. It reveals fast imaging and multiplanar reformation. Multiplanar reformat (MPR) and 3D images provide advantage for surgeons before repair surgery. It has superior anatomic details and can detect all complications (Aguirre, 2004; Diego, 2005; Ianora, 2000). MDCT demonstrates the signs of strangulation that are decrease of bowel wall enhancement, thickened bowel wall, mesenteric stranding, free fluid or air in sac (Aguirre, 2004).

5. CONCLUSION

Umbilical hernias are clinical problems especially if they are asymptomatic or in obese patients. It is difficult to diagnose them with physical examination in these situations. It is very important to detect them earlier before complications develop. MDCT is an extremely reliable imaging modality and makes the correct diagnose. Being aware of the size and contents of hernial sac, or related complications is important when hernia is detected. MDCT with MPR images provide anatomic details, show wall defects and adds information to surgeon in the planning of treatment or surgery.

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