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Multidetector Computed Tomography (MDCT) Findings of Duodenal Perforation By Ingested Chicken Bone

Case Report

Yutulan Tavuk Kemiğine Bağlı Duodenal Perforasyonun Çok Dedektörlü Tomografi Bulguları

Olgu Sunumu

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ABSTRACT

We reported the case of an 81 year-old woman who presented with acute abdominal symptoms. The patient underwent multidetector computed tomography (MDCT) showed a hyperdense, suspected foreign body in duodenal lumen. During the operation, it was found that foreign body lodged in the posterior wall of the fourth part of the duodenum and the perforation in the duodenal wall at this level was noticed. Foreign body removed by enterotomy and it was diagnosed as the chicken bone. It must be taken into consideration that in geriatric patients one of the causes of acute abdomen may be perforation of bowel wall due to unconscious foreign body ingestion. MDCT is an effective modality in determining this foreign bodies and complications such as perforation preoperatively.

Key words: *Bone, Perforation, Computed Tomography*

ÖZET

Biz akut karın semptomları ile başvuran 81 yaşında kadın hasta olgusunu sunduk. Hastanın çok dedektörlü tomografisinde duodenal lümende, hiperdens, şüpheli yabancı cisim görüldü. Operasyon boyunca, duodenum dördüncü kısım posterior duvarına saplanmış yabancı cisim ve bu seviyede duodenum duvarında perforasyon saptandı. Yabancı cisim enterotomi ile çıkarıldı ve tavuk kemiği tanısı aldı. O yaşlı hastalarda bilinmeyen yabancı cisim alımına bağlı barsak duvarında perforasyona yol açan akut karın nedenlerinden biri olarak akılda tutulmalıdır. Çok dedektörlü tomografi operasyon öncesi perforasyon gibi komplikasyonları ve yabancı cisimleri tanımlamada etkili bir modalitedir.

Anahtar kelimeler: *Kemik, Perforasyon, Bilgisayarlı tomografi*

INTRODUCTION

Foreign body ingestion is a common clinical problem. Most ingested foreign bodies pass through the gastrointestinal tract uneventfully within 1 week, and gastrointestinal perforation is rare, occuring in less than 1% of patients (1, 2). Most cases of ingestion of a foreign body are unconcious and/or accidental and are more common in children and elderly people. Multidetector computed tomography (MDCT) is useful in the correct preoperative diagnosis of foreign body perforation. The foreign bodies could be shown quickly by using coronal and sagittal reconstructions with MDCT (3). In this case, we presented MDCT findings of the duodenal perforation secondary to involuntary and unconscious ingestion of the chicken bone in an elderly patient.

CASE REPORT

An 81 year-old woman was admitted to our emergency room due to complaints of nausea, vomiting and abdominal pain radiating to the back. The patient was unconscious of having ingested a foreign body. Physical examination of the patient revealed abdominal tenderness, generalized defense and rebound. The bowel sounds were hypoactive. Leukocytosis was determined in laboratory data. The patient was evaluated for etiology of the acute abdomen by MDCT (Siemens, Somatom plus 4, Germany). Precontrast, arterial, portal and late phase images were obtained. The slice thickness was 5 mm Coronal and sagittal reconstruction images were obtained from the image data. Free air and fluid in the retroperitoneal space at the level of pancreas was detected. There was also fluid in the right paracolic gutter detected with MDCT imaging. In addition to them, there was a hyperdense, suspected foreign body in duodenal lumen (Figure 1). This foreign body was demonstrated clearly by coronal and sagittal reconstructions with 1 mm slice thickness (Figure 2). During the operation, it was found that foreign body lodged in the posterior wall of the fourth part of the duodenum and the perforation in the duodenal wall at this level was noticed. Foreign body removed by enterotomy. It was diagnosed as the chicken bone.

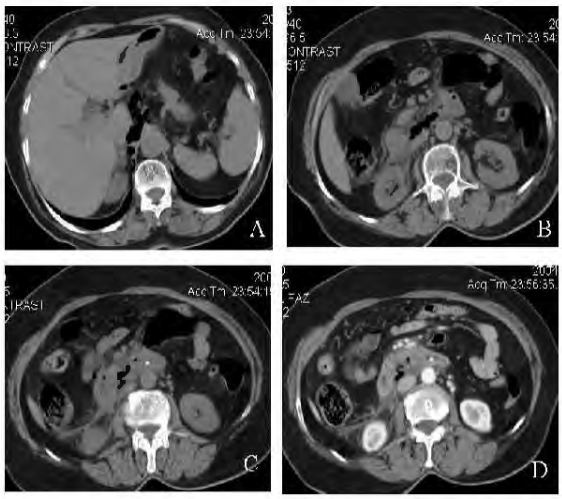

Figure 1: *Precontrast (A, B, C) and postcontrast (D) axial CT scans show chicken bone as a circumlinear hyperdensity within duodenal lumen. Free fluid and air were present in periduodenal area.*

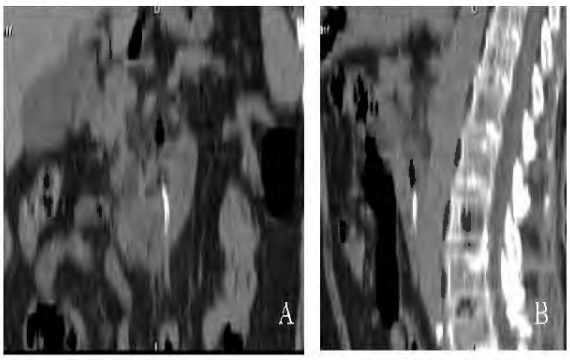

Figure 2: *Coronal (A) and sagital (B) reconstruction images shows hyperdense chicken bone as a circumlinear density more clearly.*

DISCUSSION

Foreign body perforation of the gastrointestinal system has diverse clinical manifestations and the correct preoperative diagnosis is seldom made. It is currently thought that less than 1% of ingested foreign bodies will perforate the bowel. They are elongated, sharp or pointed materials as fish bones, toothpicks, and chicken bones. Ingestion of a foreign body is more common at the extremes of life (children and elderly people) among those with mental disorders and in professionally exposed people (carpenters, dressmaker and upholsterers). Predisposing factors may be conditions as alcohol or drug abuse, psychiatric disorders, anti-inflammatory treatments, poor vision and rapid eating. There is perforation tendency in Crohn like diseases caused by bowel fragility, too (4-6). The acute clinical presentations are nonspesific, mimicking more common acute abdominal conditions like appendicitis, diverticulitis, cholecystitis. Injury may occur anywhere from mouth to anus (5,7).

The most common perforation sites are ileum, ileocecal and rectosigmoid region (4). In these regions, there is an important change in direction in intestinal transit between a mobile portion of the mesocolon (ileum and sigmoid) and a more or less fixed portion of the retroperitoneum (cecum and rectum). In addition to, calibration of these bowel segments are narrow. Duodenal perforations to the retroperitoneum are less common and more occult clinical symptoms are present. Perforation has also been described in the Meckel's diverticulum and in the appendix (6,8).

MDCT can diagnose the etiology of acute abdomen such as appendicitis, diverticulitis, cholesytitis and intestinal obstruction. The most common CT findings of the perforation of the small intestine caused by ingested foreign bodies are a thickened intestinal segment, localized pneumoperitoneum, surrounded by fatty infiltration and associated with already present or developing obstruction or sub-obstruction. Ingested foreign body in MDCT may be hyperdense related to calcium content. The identification of the calcified foreign bodies for the definite diagnosis is clearly made by CT. Sometimes, this identification is only possible with analysis of very thin overlapping reconstructions obtained not only in the perforation sites, but also through the entire abdomen Potential limitation of CT is scanning thickness. It is not practical for most institutions to use such fine-cut CT scans with 3D reconstruction to examine all patients presenting with an acute abdomen. Use of thinner CT slices allows reviewers to better trace structures such as blood vessels and differentiate them from calcified foreign bodies. It also limits the chance that a foreign body is present between slices when movement artifacts are present, especially with use of older scanners with slow scanning times. Coulier et al. emphasized the importance of the thickness of CT slices in the detection of foreign bodies. In their series, foreign bodies were identified preoperatively with CT in all seven patients. In that study, single-detector helical CT with 3-mm or 1.5-mm slices and MDCT with 1.25-mm or 0.65-mm slices were used and the images examined with multiplanar reconstructions and cine mode on workstations. The orientation of a foreign body with respect to an axial CT scan also can affect the perception of the viewer. Coronal reconstruction would be especially useful in overcoming this limitation (3).

In this case an old patient with involuntarily ingestion of chicken bone presenting with nonspecific acute abdominal symptoms was reported. It must be taken into consideration that in geriatric patients one of the causes of acute abdomen may be perforation of bowel wall due to unconscious foreign body ingestion. MDCT is an effective modality in determining this foreign bodies and complications such as perforation preoperatively.

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