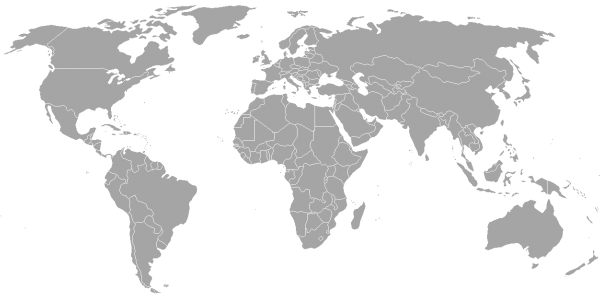
Chilaiditi Syndrome



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ABSTRACT

Chilaiditi syndrome is a condition arising from interposition of hepatic flexure or small intestine between liver and diaphragm intermittently or constantly. This syndrome is usually asymptomatic and diagnosis is usually made radiological and named as Chilaiditi sign. And if symptomatic it is defined as Chilaiditi syndrome. In this study, detection of frequency of Chilaiditi syndrome and its etiologic factors are aimed. All of the abdominal computed tomography studies taken in radiology unit of our hospital at preceding 1 year were screened retrospectively. Files of the patients who had Chilaiditi finding were analyzed retrospectively, demographic and clinical findings were recorded. Eighteen Chilaiditi signs were detected in 3520 abdominal CTs taken and patients were retrospectively analyzed. Two patients were symptomatic and the remaining were asymptomatic. Mean age was 69, 3 years and except one patient all the patients had an accompanying chronic illnesses. Of the patients in whom Chilaiditi sign was detected, 3 were females and remaining 15 were males. Number of Chilaiditi finding in 3520 CT was 18 and its incidence in patients requiring abdominal CT is estimated as 0,19%. Two cases were Chilaiditi syndrome and only 11% of Chilaiditi findings were found to be Chilaiditi syndrome. In the light of literature the most important etiologic factors for Chilaiditi sign and Chilaiditi syndrome are advanced age, male gender and accompanying chronic diseases. When Chilaiditi sign is detected, gastrointestinal tractus should be reviewed and differential diagnosis with pneumoperitoneum and the other conditions should be made.

Key words: *Chilaiditi syndrome, sign, etiology*

Chilaiditi Sendromu

ÖZET

Chilaiditi sendromu kolonun hepatik fleksurasının veya ince bağırsak anslarının aralıklı veya sürekli olarak karaciğer ile diafragma arasına girmesi sonucu oluşan bir tablodur. Bu sendrom sıklıkla asemptomatik olup tanı genellikle radyolojik olarak konulur ve Chilaiditi işareti olarak adlandırılır. Ancak bu duruma bağlı olarak bulantı, kusma, karın ağrısı, gaz distansiyonu, aralıklı intestinal obstrüksiyon, solunum sıkıntısı ve benzeri şikayetler meydana gelebilir ve semptomatik olduğunda Chilaiditi sendromu olarak tanımlanır. Ender rastlanan ve tedavisi semptomatik olan bu sendrom bugüne kadar birçok hastalık ile ilişkilendirilmiştir. Bu çalışmada Chilaiditi sendromunun sıklığı ve etyolojide rol alan faktörlerin tespit edilmesi amaçlanmıştır. Hastanemiz radyoloji ünitesinde 1 yıl içinde çekilen tüm karın tomografileri retrospektif olarak tarandı. Chilaiditi bulgusu olan hastaların dosyaları retrospektif olarak incelendi, demografik ve klinik bulguları kaydedildi. Çekilen 3520 karın tomografisinde 18 Chilaiditi işareti tespit edildi ve hastalar retrospektif olarak analiz edildi. 2 hasta semptomatik olup (Chilaiditi sendromu) kalanlar asemptomatik idi. Yaş ortalaması 69,3 olup olguların biri hariç tümümde yandaş kronik bir hastalık mevcut idi. Chilaiditi işareti tespit edilen hastaların 3'ü kadın olup kalan 15 olgu erkek idi. 3520 karın tomografisinde Chilaiditi bulgusu 18 olgu olup görülme oranı % 0,19 olarak hesaplanmıştır. 2 olgu Chilaiditi sendromu olup tüm Chilaiditi bulgularının ancak % 11'inin Chilaiditi sendromu olduğu tespit edilmiştir. Bu çalışmanın sonucu olarak literatür bilgileri eşliğinde Chilaiditi işareti ve Chilaiditi sendromu için en önemli etyolojik faktörün ileri yaş, erkek cinsiyet ve kronik yandaş hastalıkların olduğu söylenebilir. Radyolojik olarak da olsa Chilaiditi işareti tespit edildiğinde gastrointestinal traktus gözden geçirilmeli, pneumoperitoneum ve diğer karışabileceği durumlar ile ayırıcı tanısı yapılmalıdır.

Anahtar kelimeler: *Chilaiditi sendromu, bulgu, etyoloji*

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INTRODUCTION

Interposition of bowel between liver and diaphragm which is a rare anomaly was first defined by Greek radiologist Demetrius Chilaiditi at 1910 (1, 2). Because it is usually asymptomatic diagnosis is made incidentally during abdominal imaging studies. Sometimes it may be associated with a wide spectrum of gastrointestinal symptoms (abdominal colic, bowel distention, nausea, vomiting). Although the treatment is generally conservative sometimes surgery may be required or it may be associated with a situation that requires surgery such as volvulus (1, 2). We decided to assess the frequency of disease and etiologic factors in hospital patients by reviewing abdominal computed tomography studies taken in the last year for Chilaiditi sign.

MATERIAL AND METHODS

All CT studies taken between July 2009 and July 2010 in Amasya Sabuncuoglu Serafeddin State Hospital were evaluated retrospectively. Hospital files for patients with Chilaiditi sign were found and age, gender, accompanying diseases and whether Chilaiditi syndrome symptoms present were recorded. Symptomatic patients with no other pathology that could explain these symptoms were accepted as Chilaiditi syndrome positive.

RESULTS

Eighteen Chilaiditi sign were detected in 3520 abdominal CT studies and a review of hospital files resulted in two symptomatic patients which were accepted Chilaiditi syndrome positive. Symptomatic patients were treated conservatively. Remaining 16 patients were asymptomatic and no treatment was required. Demographic analysis of the patients has shown that 3 were female and 15 were male, only 3 patients were under 60 years of age and mean age for patients with Chilaiditi sign was 69,3. Except for 1 patient with Chilaiditi syndrome all patients had accompanying chronic disease, previous surgical intervention history and cancer. Bowel was interpositioned between liver and diaphragm in all patients (Table 1). Detected Chilaiditi sign was 18 in 3520 abdominal CT imaging studies, incidence of Chilaiditi sign in hospital patients requiring abdominal CT was calculated as 1, 95 %. Only 2 cases (11%) out of 18 detected Chilaiditi sign were Chilaiditi syndrome. Age, gender, accompanying diseases were found as most important etiologic factors.

DISCUSSION

Chilaiditi syndrome which is a rarely encountered anomaly is seen 0,025-0,028% in general population. Its incidence increase with advancing age and it is more rare in children compared to adults. It is more frequently seen in male patients (male/female ratio is 4/1) (2-4). In our study 15 of 18 cases with Chilaiditi sign were male and mean age was 69.3. Gender and age are found as most important etiologic factors. Diagnosis of Chilaiditi syndrome with only history, physical exam and blood work is almost impossible and it is usually diagnosed after radiologic imaging studies. While interposition of bowel between liver and diaphragm is called Chilaiditi sign only symptomatic patients are regarded as Chilaiditi syndrome (Figure 1) (3-6). Factors contributing to this syndrome are a long and mobile mesocolon, redundancy of bowel, poor bowel motility, laxity or congenital absence of liver suspender ligaments, chronic constipation, chronic lung disease, cirrhosis, ascites and previous surgical interventions (4,5,7). Although patients with Chilaiditi syndrome are usually asymptomatic; symptoms of abdominal pain, loss of appetite, nausea, vomiting and dispnea were reported. Increasing bowel distension which reaches its peak at the end of the day and easing with eructation and flatus is typical for these patients. Patient may present with recurring abdominal colic attacks. Differential diagnosis with renal colic, subfrenic abscess and pneumoperitoneum may be required. Colonic interposition is progressive and may

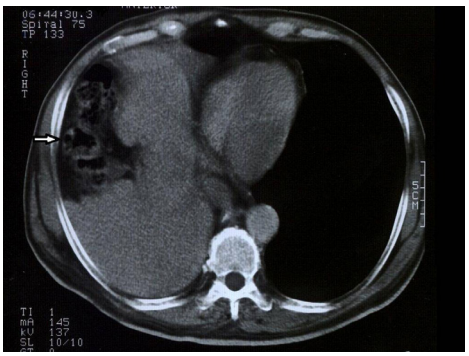

Figure 1. *Interposition of bowel*

***Table 1**. Demographic and clinical analysis of the patients*

Gender	Age	Accompanying chronic diseases	Symptoms	Type of interpositioned segment
E	70	CHF, hypertension, Metastatic gastric Ca	asymptomatic	Colon interposition
E	77	Alzheimer's disease	Asymptomatic	Colon interposition
E	45	Gastric Ca	Asymptomatic	Colon interposition
K	76	Metastatic gastric Ca	Asymptomatic	Colon interposition
E	72	COPD, cerebrovascular disease	Symptomatic	Colon interposition
E	74	COPD	Asymptomatic	Colon interposition
E	57	None	Symptomatic	Colon interposition
E	75	Lung Ca	Asemtomatik	Colon interposition
E	74	COPD, Diabetes	Asymptomatic	Colon interposition
E	63	Hypertension	Asymptomatic	Colon interposition
E	65	Prostate Ca, hypertension, hyperlipidemia	Asymptomatic	Colon interposition
E	71	Cerebrovascular disease	Asymptomatic	Colon interposition
E	58	COPD	Asymptomatic	Colon interposition
E	77	CRF, Diabetes, Hypertension	Asymptomatic	Colon interposition
K	76	Inflamatuar bowl disease, COPD, Hypertension	Asymptomatic	Colon interposition
K	80	CAD, Hypertension, Diabetes	Asymptomatic	Colon interposition
E	65	COPD, Diabetes	Asymptomatic	Colon interposition
E	72	COPD, Parkinson Disease	Asymptomatic	Colon interposition

COPD; Chronic obstructive pulmonary disease, CRF; Chronic renal failure, CAD; Coronary artery disease, CHF; Congestive heart failure, Ca; cancer

present with intestinal obstruction or volvulus associated acute abdomen (4, 5, 8). Chilaiditi syndrome cases reported in literature are associated with a lot of accompanying diseases and situations which some could be explained logically others are not. In these reports which are mostly formatted as case reports volvulus of caecum, transverse colon and sigmoid colon, suprahepatic appendicitis, paralytic ileus, abdominal trauma, liver cystectomy, scleroderma, pneumatosis cytoides intestinalis, duplication of intestine, congenital hypothroidy, chronic constipation, melanozis coli, salmonellozis, obesity, primary lung cancer, hypertension, schizophrenia and other similar accompanying situations were reported (7-15).

Hepatodiafragmatic interposition of bowel may present in three forms: interposition of colon, interposition of small intestine or interposition of both. As an exception interposition of stomach may also be seen. Interpositions of right colon or transvers colon are most frequent (72 %) (7). In our study all cases were colonic interposition, no other intestinal segment were seen. Interposition may be temporary or permanent. Enlargement of colon or its rotation on an axis, displacement of liver to midline may result in interposition of proximal transverse colon between liver and diaphragm. This is the most common way colon is entrapped. Diagnosis is incidentally made by seeing chest x-ray showing air between liver and right diaphragm. Although subdiaphragmatic air in abdominal x-ray may be associated with intraabdominal organ preforation, acute abdomen findings such as air-fluid levels and rigidity-rebound are never found. Differential diagnosis of x-ray findings with subdiaphragmatic abcess, pneumoperitoneum, posterior hepatic lesions, right sided diaphragmatic hernias (6) and retroperitoneal masses should be made. If there is still suspicion after chest x-ray and abdominal ultrasound, colon graphy with barium contrast or abdominal CT should be planned for correct diagnosis and treatment. Required treatment in most cases are conservative and consists of hospitalization, nasogastric decompression, enema, bulk agents and gas absorbing medication (8,9). Out two Chilaiditi syndrome patients were treated conservatively and their symptoms has resolved. Although symptoms usually resolve with conservative treatment recurring abdominal discomfort and symptoms may have a bad effect on quality of life. Although not frequent, interposition could result serious complications that require immediate surgical intervention. There are reports of cases with recurring attacks, internal herniation, volvulus, acute intestinal obstruction and subphrenic abscess (7,10,16).

Chilaiditi sign is rarely encountered, it is usually asymptomatic and when symptomatic usually resolves with conservative treatment. A differential diagnosis with pneumoperitoneum should be made. Age, male gender and accompanying pathologies are found most important etiologic factors for Chilaiditi syndrome.

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