The Importance of Chialiaditi’s Sign-Syndrome

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ABSTRACT

Chialiaditi’s sign-syndrome (CS) is defined as the interposition of the colon between liver and diaphragm. Its incidence is between 0.25-0.28 % and is around four times higher in males than females. Most of these cases are asymptomatic. Treatment of the symptomatic cases is usually conservative. Surgery is indicated if there are intestinal ischemia or acute abdominal symptoms. Ten patients who presented to our clinic having abdominal or non-specific findings were diagnosed incidentally as CS. Seven cases were male and, three were female and, the mean age was 48.3 ± 20.5 (range 23-81). Three cases admitted with chronic abdominal pain and constipation (one case ileus), while CS’s in the other cases was found nonspecific findings. All cases underwent chest X-ray, while abdominal plain film in 7 cases, thorax computed tomography (CT) in 3 cases, abdominal magnetic resonance imaging (MRI) in one case. Chest X-ray and abdominal plain film showed an intraluminal air fluid level under the diaphragm. Three of 10 cases underwent CT of chest revealed intestinal loops in the bilateral subphrenic area. Abdominal MRI showed colonic distension and megacolon in one case. Most of the cases with CS resolved with conservative treatment except one. Partial transverse colon resection and diaphragmatic plication were performed due to volvulus of the sigmoid colon in this case. We conclude that this rare entity should be kept in mind in order to avoid a misdiagnosis during clinical treatment and differential diagnoses. Most of the cases with CS can be treated as conservatively and surgical intervention was needed for patients to sign of abdominal complication.

Keywords: Chialiaditi, Interposition, Abdomen, Pain

1. INTRODUCTION

Chialiaditi’s sign (CS) is defined as the interposition of transverse colon between the liver and the diaphragm(1). Chialiaditi syndrome can be a self-resolving or a chronic condition. The syndrome is around four times higher in males than females. It is more common to older adults, but can occur in any age and has been reported in children. The incidence of CS is unknown. One published report estimated the incidence of 0.25-0.28 percent of the general population(1). The most common cases are asymptomatic. It is called Chialiaditi’s Syndrome when it is symptomatic, such as abdominal pain, distension, nausea, vomiting, anorexia and constipation can occur or associated with respiratory symptoms like dyspnea(1,2,3). Chialiaditi’s sign which is often asymptomatic and innocent, can be attention on the differential diagnosis, because this rare entity can be mistaken for more complications which may lead to unnecessary surgical operations. In our study, we presented 10 cases that detected incidentally Chialiaditi’s sign-syndrome in our clinic.

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2. METHODS

Between August 2008 and August 2017, 10 cases of radiological findings of Chilaiditi’s sign were enrolled in this study at our clinic. The demographic and clinical characteristics (age, gender, presentation, comorbid diseases) and imaging findings (chest X-ray, abdominal plain film, computed tomography), treatment were reviewed.

3. DATA ANALYSIS

A statistical analysis was performed using the Statistically Package for the Social Science program (SPSS, 20.0) Data were expressed as mean ±SD. Frequencies and percentages were used for the categorical measures.

4. RESULTS

Seven patients were male, three were female and the mean age was 48.3 ± 20.5 (range 23 to 81). Three of the cases (30%) were diagnosed as a Chilaiditi’s syndrome because they presented with chronic constipation and abdominal pain. Five of other cases (70%) had non-specific symptoms and, two cases were asymptomatic. These seven cases were evaluated as Chilaiditi’s sign (Table 1).

<table>
<thead>
<tr>
<th>No</th>
<th>Age/Gender</th>
<th>Symptom</th>
<th>Imaging Methods</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>79/M</td>
<td>Cough, High fever</td>
<td>Chest - abdominal graphy+Thorax CT</td>
<td>Conservative, Antibiotics</td>
</tr>
<tr>
<td>2</td>
<td>30/F</td>
<td>Dyspnea, abdominal pain</td>
<td>Chest - abdominal graphy</td>
<td>Conservative</td>
</tr>
<tr>
<td>3</td>
<td>23/F</td>
<td>Cough</td>
<td>Chest –abdominal graphy</td>
<td>Conservative</td>
</tr>
<tr>
<td>4</td>
<td>45/M</td>
<td>Cough, Headache</td>
<td>Chest - abdominal graphy</td>
<td>Conservative</td>
</tr>
<tr>
<td>5</td>
<td>62/M</td>
<td>Dyspnea, Constipation</td>
<td>Chest graphy Thorax CT</td>
<td>Transverse colon resection</td>
</tr>
<tr>
<td>6</td>
<td>42/F</td>
<td>Asymptomatic</td>
<td>Chest - abdominal graphy</td>
<td>Conservative</td>
</tr>
<tr>
<td>7</td>
<td>38/M</td>
<td>Cough</td>
<td>Chest graphy, Abdominal MR</td>
<td>Conservative</td>
</tr>
<tr>
<td>8</td>
<td>55/M</td>
<td>Dyspnea, Constipation</td>
<td>Chest - abdominal graphy</td>
<td>Conservative</td>
</tr>
<tr>
<td>9</td>
<td>81/M</td>
<td>Dyspnea</td>
<td>Chest graphy Thorax CT</td>
<td>Conservative</td>
</tr>
<tr>
<td>10</td>
<td>28/M</td>
<td>Asymptomatic</td>
<td>Chest - abdominal graphy</td>
<td>Conservative</td>
</tr>
</tbody>
</table>

There are no histories of past abdominal surgery in the backgrounds of any of the cases. On routine chest X-ray or plain abdominal radiographs, an air image of the area with several air-fluid levels (The colonic ans) between the liver and under the right diaphragm was detected in seven cases (Figure 1 A&B). In three cases (30%), transverse colon interposition between liver and diaphragm was detected in the thorax computed tomography (CT) (Figure 1 C&D). In one case, a mega ascending – transverse colon was shown as well as the same findings as the abdominal Magnetic Resonance Imaging (MRI) (figure 2 A&B).

Other clinical features of the cases are summarized in Table 1. In all cases, the colon was localized in the anterior of the diaphragm and between the liver and the diaphragm. Ultimately, we decided follow-up of patients with asymptomatic. Conservative symptomatic treatments such as hydration, intestinal decompression, laxatives, added dietary fiber foods and Prokinetic drugs were applied to symptomatic cases.

Most of these cases presented with abdominal distention and constipation was remained asymptomatic after the treatment. Case number 1 with a history of cough, productive sputum, right side pain was diagnosed the right lower lobe pneumonia and treated with parenteral antibiotics for 14 days.

Case number 5 with symptoms chronic constipation and dyspnea, a partial transverse colon resection and diaphragmatic plication surgery were performed because of the presence of a megacolon and a subileus (Figure 2). Postoperative complications did not develop and were discharged on the 10th day. All cases were followed up periodically in terms of Chilaiditi’s sign-syndrome. Median follow up period was 62.3 ± 10.4 months.

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5. DISCUSSION

Chilaiditi's syndrome, which is asymptomatic in large case population, can be described as hepatodiaphragmatic interposition of the bowel. It is usually detected incidentally\(^1\). Asymptomatic cases are called Chilaiditi's sign, whereas symptomatic cases are called Chilaiditi's syndrome. Most of the cases remain uncomplicated and are detected incidentally during radiological examinations. Hepatodiaphragmatic interposition may cause acute, chronic or recurrent symptoms related to the respiratory system (dyspnea, chest pain) and the digestive system (abdominal pain, vomiting, constipation, diarrhea, bloating, fatigue, loss of appetite). But, it can lead to need for emergency surgery such as volvulus, incarceration and perforation\(^2,3\). In our study, 30% of cases Chilaiditi's syndrome was detected. In one case (10%) elective surgery was performed. In another case partial atelectasis resulting from compression may facilitate the development of pneumonia in the right lower lobe. Conservative treatment and follow-up were sufficient in other patients.

The hepatodiaphragmatic interposition of the colon has been described in different anatomical types. The most common form is that the colon is localized on the anterior of the diaphragm and on the right lobe of the liver. Localization in the posterior subphrenic area is less common and combined anterior and posteriorly located colon dislocation has also been reported\(^4\). All of our cases were the most common first type.

Predisposing factors; advanced age, chronic pulmonary disease, emphysema, diarrheagmatic paralysis, constipation, increased gastrointestinal motility, cirrhosis and pregnancy. Anatomical factors are; Malformation or malposition of the intestines and the looseness of the hepatic suspension of the ligament\(^2,3,4,5\). Chronic Obstructive Pulmonary Disease (COPD) in three cases and pregnancy in one case were evaluated as predisposing factors.

The diagnosis is usually coincidental with chest X-ray. Computed tomography is required for differential diagnosis and complicated cases. Pneumoperitoneum, subdiaphragmatic abscess, posterior lesions of the liver and retroperitoneal masses should be considered in the differential diagnosis. Chilaiditi’s syndrome can potentially be mistaken for pneumoperitoneum, which can result in unnecessary surgery. The best imaging modality for visualization is CT scan which carries an added benefit of ruling out the possibility of diaphragmatic rupture. CT is also useful in complicated situations such as volvulus, incarceration and perforation\(^3,6\). In the cases of our study, the differential diagnosis was not difficult. In suspicious cases, differential diagnosis was made with thorax CT. We had no pneumoperitoneum case.

Treatment is usually conservative. Hydration, intestinal decompression, laxatives should be applied, dietary fiber foods should be added and patients should be observed. Surgical treatment should be performed in cases does not respond to initial conservative management or intestinal ischemic findings or acute abdomen development. In surgical treatment; the colon is released with laparotomy, diaphragmatic plication performs, the back and the displaced liver are brought to the anatomical position. Conservative treatment and follow-up were sufficient in other patients.

Other two cases of Chilaiditi’s syndrome were treated conservatively. During the follow-up of other cases of Chilaiditi’s sign (with no intestinal symptom) no additional clinical finding was detected.

Fomin et al.\(^9\) presented a case with Chilaiditi’s syndrome which was complicated by megacolon progressed to right heart failure and ultimately causing death. Therefore; this rare entity should be included in the differential diagnosis in patients that have recurrent intestinal and respiratory symptoms.

6. CONCLUSION

Chilaiditi’s sign-syndrome can often be asymptomatic for many years, but rarely can lead to serious conditions such as colonic volvulus and acute intestinal obstruction which require emergency surgical treatment. Heart failure due to megacolon can be fatal also. For these reasons, in cases of Chilaiditi’s sign-syndrome, which is especially symptomatic, thorax CT should be requested in terms of differential diagnosis and possible other diagnoses should be excluded. Conservative treatment cases should be followed.

We conclude that this rare entity should be kept in mind in terms of possible serious complications and differential diagnoses.
REFERENCES


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