



## Monaldi Archives for Chest Disease

eISSN 2532-5264

<https://www.monaldi-archives.org/>

**Publisher's Disclaimer.** E-publishing ahead of print is increasingly important for the rapid dissemination of science. The **Early Access** service lets users access peer-reviewed articles well before print / regular issue publication, significantly reducing the time it takes for critical findings to reach the research community.

These articles are searchable and citable by their DOI (Digital Object Identifier).

The **Monaldi Archives for Chest Disease** is, therefore, e-publishing PDF files of an early version of manuscripts that have undergone a regular peer review and have been accepted for publication, but have not been through the typesetting, pagination and proofreading processes, which may lead to differences between this version and the final one.

The final version of the manuscript will then appear in a regular issue of the journal.


E-publishing of this PDF file has been approved by the authors.

*All legal disclaimers applicable to the journal apply to this production process as well.*

Monaldi Arch Chest Dis 2023 [Online ahead of print]

*To cite this Article:*

Scaramozzino MU, Levi G, Plastina UR, Sapone G. **A rare case of asthmatic patient with left Chilaiditi's syndrome.** *Monaldi Arch Chest Dis* doi: 10.4081/monaldi.2023.2648

 ©The Author(s), 2023  
Licensee [PAGEPress](https://www.pagepress.org/), Italy

Note: The publisher is not responsible for the content or functionality of any supporting information supplied by the authors. Any queries should be directed to the corresponding author for the article.

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article or claim that may be made by its manufacturer is not guaranteed or endorsed by the publisher.



## A rare case of asthmatic patient with left Chilaiditi's syndrome

Marco Umberto Scaramozzino,<sup>1,2</sup> Guido Levi,<sup>3</sup> Ubaldo Romeo Plastina,<sup>4</sup>  
Giovanni Sapone<sup>5</sup>

<sup>1</sup>Outpatient Clinic of Pulmonology "La Madonnina", Reggio Calabria

<sup>2</sup>Thoracic Endoscopy, Tirrenia Hospital, Belvedere Marittimo (CS)

<sup>3</sup>Pulmonology Department, ASST Spedali Civili, Brescia; Department of Clinical and Experimental Sciences, University of Brescia

<sup>4</sup>ECORAD Radiology and Ultrasound Study, Reggio Calabria

<sup>5</sup>Cardiology Department, Head of Nursing Polyclinic M.d.c., Reggio Calabria, Italy

**Corresponding author:** Dr. Marco Umberto Scaramozzino, Director Outpatient Clinic of Pulmonology "La Madonnina", Reggio Calabria (RC), Head of Thoracic Endoscopy, Tirrenia Hospital Belvedere Marittimo (CS), Italy. mail: scaramozzinomarco91@gmail.com Telephone: +39 328 3074746 0965-893920

### Contributions:

MUS and GL helped in conception and design of the study, MUS, GL and GS did data collection, MUS and GL did analysis and interpretation of data; MUS and GL contributed to drafting the work and revising it critically for important intellectual content. All authors approved the final version for publication and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

**Conflict of interest:** The authors declare they have no competing interests, and all authors confirm accuracy. (Disclosure forms attached separately)

**Grant support & financial disclosures:** None

**Article category:** Case report

**Ethical Considerations, informed consent, and Consent for publication:** Informed consent was signed by all study participants. All mentioned ethical aspects and related consents were taken into consideration during the conduct of this study.

**Acknowledgement:** The corresponding author would like to sincerely thank Ubaldo Romeo Plastina who helped us with interpretation of radiological imaging findings.

## **Abstract**

The purpose of this case report is to emphasize the rarity of the case in question, which is left Chilaiditi syndrome in a patient with bronchial asthma. The patient is a 79-year-old woman who was admitted to our clinic in January 2023 for recurrent dyspnea, chest heaviness, wheezing, eructation, dysphagia, and epigastric abdominal pain associated with bronchitis. He used simple spirometry, which revealed a mixed mild-moderate ventilatory deficit with decreased small airway volumes, decreased peak expiratory flow, and negative broncho reversibility tests for asthma. At 3 months, the patient presented with a chest radiograph showing marked elevation of the left hemidiaphragm and rightward deviation of the cardiac shadow. He repeated the spirometry, which showed a clear improvement compared to the previous control with an important variation of the peak respiratory flow during inhaled corticosteroid (ICS)/long-acting beta-agonist (LABA), indicating the presence of underlying bronchial asthma. The radiological picture was identified as left Chilaiditi syndrome, because the patient had gastrointestinal symptoms in addition to respiratory symptoms. Proton pump inhibitors and new generation alginates with the presence of hyaluronic acid and melatonin must also be included in the treatment of the symptoms, which have an important effect on gastroesophageal reflux disease (GERD) secondary to this herniation of the viscera into the thoracic cavity. The rarity is represented by the diaphragmatic pathology's left localization.

**Key words:** Chilaiditi syndrome, asthma, obesity, case report, left side.

## **Introduction**

Chilaiditi syndrome was first described in 1910 by a radiologist of Greek origin. It is a pathology that has an incidence in the world that varies from 0.025 to 0.28% [1], with a prevalence in males (4:1) [2]. In the clinical case reported, we report the symptoms of a patient who came to our attention at the Outpatient Clinic of Pulmonology “La Madonnina”, Reggio Calabria, with asthmatic respiratory symptoms associated with epigastric abdominal

pain, belching, dysphagia. The diagnosis of Chilaiditi syndrome was made radiologically, the particularity of this case is represented by the left localization.

## **Case Report**

The clinical case described is a 79-year-old Caucasian woman who came to our attention in January 2023 for reported episodes of dyspnea, chest heaviness, wheezing, eructation, dysphagia, epigastric abdominal pain, frequent episodes of bronchitis. History: non-smoker, allergic to tramadol and ASA (acetylsalicylic acid), hypothyroidism on levothyroxine therapy, arrhythmic heart disease on NOA (new oral anticoagulant) therapy, folate deficiency, systemic arterial hypertension, hypercholesterolemia, hyperuricemia, obesity. At the first visit we performed the ACT (asthma control test) which was equal to ten, Simple spirometry with broncho-reversibility test which is attached (Table 1). On physical examination, the patient presented with a diffuse obstructive finding with bilateral expiratory wheeze and wheeze. The vital parameters were all normal, except for the SpO<sub>2</sub> equal to 90% in ambient air. Therefore, an aerosol therapy was set up for the first 15 days with beclomethasone and ipatropium bromide performed three and twice a day, respectively, broad spectrum antibiotic therapy with azithromycin for 6 days, oral corticosteroid for 8 days, gastric protector, then ICS/LABA two times beyond until the following checkup after 3 months. Following that, the patient repeated the control spirometry (Table 1), which revealed a significant improvement in peak expiratory flow and small airway volume, indicating the presence of an asthmatic component. The patient also had a chest X-ray, which revealed a marked elevation of the left diaphragm with the interposition of some thickened intestinal loops (Figure 1), which led to the diagnosis of left Chilaiditi syndrome. We treated the patient with ICS/LABA, proton pump inhibitors, new generation alginate and after 3 months the results of the spirometry and the patient's clinical conditions were improved with an increase in peripheral oxygen saturation SpO<sub>2</sub>= 97% in room air and clinical improvement of the previously reported symptoms. We await the patient for the new re-evaluation at six months to monitor her over time.

## **Discussion**

The reported clinical case is a very rare case in the literature, which in recent years has seen an increase in the incidence of these diagnoses in obese patients. The sign of Chilaiditi is an incidental finding that can be seen on the chest radiograph and is associated with abdominal or thoracic symptoms [3]. Treatment of the pathology is usually non-surgical with bed rest, fluid supplementation, nasogastric decompression, diet rich in fiber [4]. As reported on a review of the literature usually variations of the normal anatomy of the diaphragm, can lead to the pathological interposition of the colon. These anatomical variations may include the absence, laxity or lengthening of the suspensory ligaments of the transverse colon or the falciform ligament such as dolichocolon or congenital malpositions [5]. In a study conducted by American surgeons, it is underlined that there is an important distinction between the Chilaiditi sign, which is found in asymptomatic patients, and the Chilaiditi syndrome, which produces symptoms associated with intestinal interposition [6]. It can often be described in adults but sometimes also in children as indicated in a case report of a 4-year-old Nepalese girl [7]. In the most serious cases, associated with anomalies of the autonomic nervous system, intestinal decompression can be performed with gradual resolution of the symptoms [8]. Conservative treatment in pediatric age is always preferable as indicated by a case report in the literature [9]. There is a single rare case in the literature of left Chilaiditi syndrome in a man with suspected intestinal perforation [10]. The reported clinical case is unique in that there are no cases reported in the literature of the association between asthmatic pathology and Chilaiditi syndrome.

## **Conclusions**

The importance of knowing the Chilaiditi syndrome radiologically through images of the interposition of intestinal loops inside the thoracic cavity is fundamental in the diagnosis, furthermore in the reported clinical case the asthmatic symptoms were aggravated and accentuated by this underlying situation. To date, there is little evidence in the literature regarding this topic and there is only one clinical case in the literature of left localization of

the disease. Further clinical studies are needed regarding this association between the two entities.

**Legend:**

FEV1%: Percentage of predicted value of FEV1

FVC%: Percentage of predicted value of FVC

FEV1: Maximum Expiratory Volume at first second

FEV1/FVC%: Index of Tiffeneau

FVC: Forced vital capacity.

PEF: Peak of expiratory flow

FEF25-75%: Forced expiratory flow between 25 and 75% of FVC.

FET: Forced expiratory time.

**References**

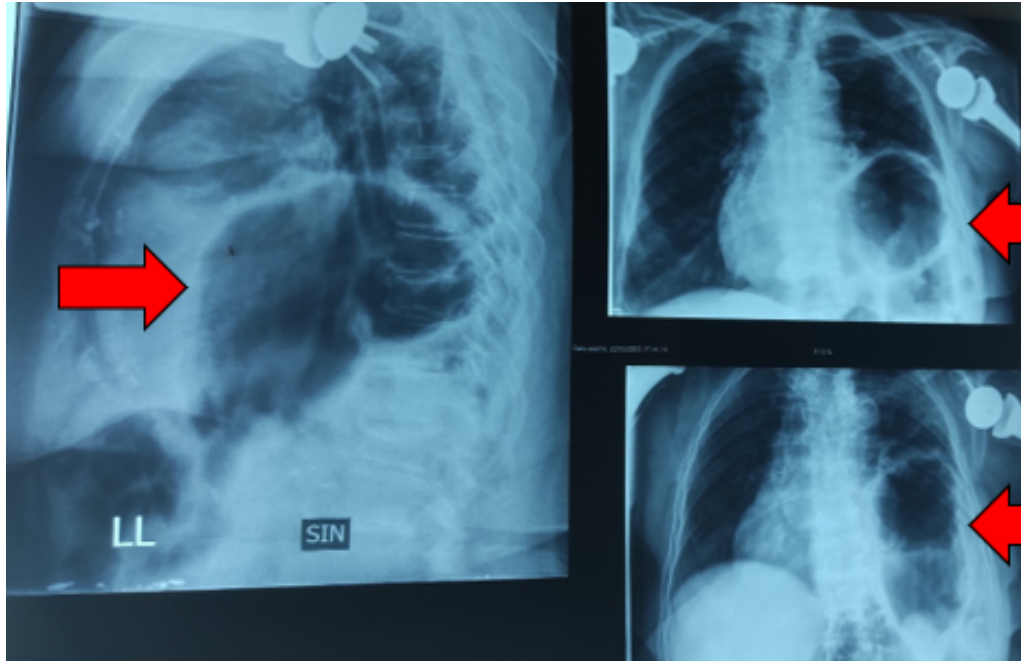
1. Shinha T. Chilaiditi syndrome. *Intern Med* 2017;56:1125-6.
2. Ali F, Srinivas S, Akbar Khan HM, Reddy D. Chilaiditi syndrome: a rare case of chest pain due to colonic interposition. *Cureus* 2020;12:e9288.
3. Hountis P, Chounti M. Chilaiditi sign or syndrome? Diagnostic question in two patients with concurrent cardiovascular diseases. *Monaldi Arch Chest Dis* 2017;87:775.
4. Karaman O, Kahyaoglu M, Alpay E, et al. Chilaiditi syndrome. *Korean J Intern Med* 2018;33:1255.
5. Moaven O, Hodin RA. Chilaiditi syndrome: a rare entity with important differential diagnoses. *Gastroenterol Hepatol (N Y)* 2012;8:276-8.
6. Saber AA, Boros MJ. Chilaiditi's syndrome: what should every surgeon know? *Am Surg* 2005;71:261-3.
7. Mishra A, Shrestha AL. Chilaiditi syndrome in a Nepalese girl - A potential mislead! *Int J Surg Case Rep* 2022;91:106808.

8. Sotiropoulos C, Sakka E, Diamantopoulou G, et al. Chilaiditi syndrome with a large colonic loop in a patient with autonomic nervous system dysfunction. *Cureus* 2021;13:e15877.
9. Evrengül H, Yüksel S, Orpak S, et al. Chilaiditi syndrome. *J Pediatr* 2016;173:260.
10. Rodríguez-Martínez JA. Síndrome de Chilaiditi izquierdo, un caso raro. *Imagen Diagnóstica* 2017;8:58-9.

**Table 1.** Simple Spirometry at the baseline with broncho reversibility test and at three months after treatment with ICS/LABA two inhalations twice day. Noted the variability of PEF: +12% at three months.

<b>Spirometry parameters</b>	<b>Results baseline</b>	<b>Results after Salbutamol 400mcg</b>	<b>Results three months</b>
<b>FVC%</b>	<b>44%</b>	<b>43% (-1%)</b>	<b>50% (+6%)</b>
<b>FEV1%</b>	<b>45%</b>	<b>44% (-1%)</b>	<b>50% (+5%)</b>
<b>FEV1/FVC%</b>	<b>97%</b>	<b>102% (+5%)</b>	<b>100% (-2%)</b>
<b>FEF<sub>25-75%</sub></b>	<b>39%</b>	<b>49% (+27%)</b>	<b>50% (+28%)</b>
<b>PEF%</b>	<b>68%</b>	<b>70% (+2%)</b>	<b>80% (+10%)</b>
<b>FET (sec)</b>	<b>7.33 sec.</b>	<b>7.14 sec.</b>	<b>7.70 sec.</b>
<b>FEF<sub>25%</sub></b>	<b>47%</b>	<b>63% (+34%)</b>	<b>81% (+18%)</b>
<b>FEF<sub>50%</sub></b>	<b>22%</b>	<b>32% (+47%)</b>	<b>39% (+7%)</b>
<b>FEF<sub>75%</sub></b>	<b>63%</b>	<b>77% (+22%)</b>	<b>58% (-19%)</b>





**Figure 1.** Chest X-ray in postero-anterior and lateral projections shows the interposition of colon on the left side of the chest with the shift of the cardiac shadow to the right and a thickening of the colon in the lower scans, as you can see with red arrows.