

Ultrasonido en el diagnóstico y seguimiento del quilotórax; reporte de un caso y revisión de la literatura

Ultrasound in the diagnosis and monitoring of chylothorax; a case report and literature review

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ABSTRACT

Chylothorax is a rare cause of pleural effusion, we present a case of right post-traumatic chylothorax after venous catheter placement in the central jugular vein and we propose the systematic use of ultrasound for the identification early detection and follow-up, since if not detected in time it can lead to malnutrition and even mortality.

Keywords: Central venous catheters, chylothorax, ultrasonography, thoracic duct.

RESUMEN

El quilotórax es una causa rara de derrame pleural, presentamos un caso de quilotórax postraumático derecho posterior a la colocación de un catéter venoso central yugular y proponemos el uso sistemático de la ecografía para la identificación precoz y seguimiento, ya que de no detectarse a tiempo puede conllevar a desnutrición e incluso mortalidad.

Palabras clave: Cateter venoso central, quilotórax, ultrasonografía, conducto torácico.

Chylothorax is a rare cause of pleural effusion, representing 2-3% of them. It is defined as the accumulation of lymphatic fluid in the pleural space. The diagnosis is established with a triglyceride level greater than 110 mg/dL and a cholesterol level less than 200 mg/dL in the pleural fluid. Lymph loss can be a major cause of immunosuppression and malnutrition¹. Trauma accounts for 50% of the cases, and most of the non-traumatic cases result from malignant etiologies, specifically lymphoma, with approximately 61% of them.²

Ultrasound has become a tool for the early identification of pleural effusion, as it shows greater sensitivity and specificity (100% and 99.7%, respectively), even better than the chest x-ray which request at least of 150 ml of effusion. The presence of echoes, septa or nodules allows it to be classified as an exudate, the absence does not determine transudate.³

We report a 75-year-old woman with a history of hypothyroidism and severe aortic stenosis operated 1 year ago, who was admitted to the emergency department with diffuse abdominal pain associated with diarrhea and vomiting.

Vital signs revealed a blood pressure of 73/30 mmHg, heart rate of 123 beats/min. On physical examination, the patient presented a depressible abdomen without palpable masses, with pain on deep palpation in the umbilical region, without Blumberg and Murphy's signs. To clarify the findings, blood samples were taken in which a C reactive protein (CRP) of 302.8mg/dL was observed (normal range 0-5 mg/dL), an abdominopelvic (computer tomography) CT scan with pancreatitis and bilateral pleural effusion.

We started empiric antibiotic therapy and fluid therapy, unresponsive a fluids, therefore she was transferred to the intensive care unit (ICU) to place a right jugular central venous catheter, norepineph-

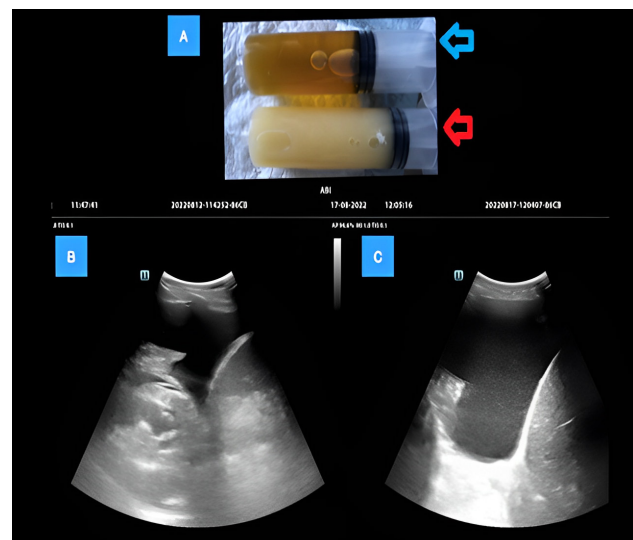


Figure 1.

- A) Pleural fluid, (blue arrow) transudate product of the patient's heart failure, (red arrow) shows chylous fluid attributed to injury directly from the thoracic duct.
 B) Initial ultrasound showing anechoic fluid, when we drained it the fluid was milky.
 C) Control ultrasound where anechoic fluid can be seen. When we drained it, the initial fluid was milky and later it was transparent.

rine perfusion was started, the stool culture was positive for *C. Difficile* by Polymerase chain reaction (PCR), therefore she was treated with fidaxomicin. She started atrial fibrillation with rapid ventricular response that worsened the pleural effusion. It was performed a thoracentesis and 600ml of serous fluid was drained.

Upon discharge from the ICU, she presented a state of generalized congestion. We considered it to be the product of decompensated

Author, year, journal	Gender	Age	Site of CVC	Side	Management
Hsu LH, 1997, chin Med Jurnal (Taipei) ⁵	Female	79 years	Left Internal jugular vein	Left	Low-fat diet and drainage tube
Puneet Saxena, 2015 Lung india ⁴	Female	42 years	Left internal jugular vein	Bilateral	Intra pleural drainage tubes
Samie Asghar, Faisal Shamim, 2017, Anesth Essays Research ⁶	Male	27 years	Right subclavian vein	Bilateral	Drainage tubes
Guramrinder Singh Thind, 2017, BMJ Journals ⁷	Female	48 years	Rigth subclavian vein	Bilateral	Intra pleural drainage tubes
Pornprom Muangman, 2008, J Med Assoc Thai ⁸	Male	58 years	Left internal jugular vein	Left	Low-fat diet and drainage tube

Table 1. Summary of all reported cases of chylothorax secondary to CVC placement.

heart failure, so we performed a bedside ultrasound on the patient in which we identified a right pleural effusion of approximately 1,600cc aniconic liquid without septation compatible with a possible transudate but after a right thoracentesis guided by ultrasound in which we drained approximately 1,200cc of milky liquid (Figure 1) compatible with a chylothorax that we later confirmed with the analysis of the liquid, with triglycerides of 132, cholesterol of 41mg/dL. We obtained a negative cytology for malignancy, negative tumor markers, autoimmunity, smear microscopy and cultures, also rule out lymphangiomyomatosis. We started treatment with octreotide and a diet without short-chain triglycerides, a follow up ultrasound was performed, and noticed that the pleural effusion increased progressively. We considered it a high-output chylothorax and decided to request a lymphography, suspecting a possible traumatic cause. Lymphography could not be performed due to the fragility and size of the patient's lymphatic vessels, so we decided to do a second thoracosentesis. Obtaining a clear translucent fluid compatible with a transudate.

Venous catheterization is a common procedure in intensive care units and complications occur in up to 15% of cases⁴. We did an exhaustive bibliographic search in PubMed between the years 1990 and 2022 using the terms "chylothorax" and "central venous catheter", we found 20 reports describing a total of 24 cases of chylothorax attributable to CVC placement, only in 5 cases was chylothorax attributed to injury directly from the thoracic duct as in our case (Table 1)^{4,5,6,7,8}. All these cases had something in common: chylothorax was diagnosed because the patients presented dyspnea between 24-48 hours after the procedure.

Despite the fact that it is an infrequent complication, given the frequency with which this procedure is performed, pulmonary ultrasound should be recommended as an essential technique in the follow-up of patients.

The chylothorax is a rare pathology that can cause serious morbidity and even mortality if it is not recognized in time. Ultrasound is a method that allows the recognition of pleural effusion in its initial stages and that could allow identifying the type of effusion liquid in some cases by ultrasound characteristics, which must be confirmed through thoracentesis and biochemical analysis. Ultrasound also allows us to monitor the evolution of pleural effusion and its response to treatment, which is why it becomes a fundamental tool in the diagnosis, management and monitoring of this pathology.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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This research had no funding sources.

ETHICAL ASPECTS

All participants submitted a consent form to be included in this study.

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