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Lymphoscintigraphy In a Case of Recurrent Chylopericardium

Lokeshwaran Madurai Kalimuthu, Vivek Kumar Saini, Prasanta Kumar Pradhan*

Department of Nuclear Medicine, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, India

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ABSTRACT

Chylopericardium is an uncommon and benign condition in which triglyceride-containing chylous fluid collects in the pericardial cavity at high concentrations. Usually, chylopericardium occurs due to congenital malformation of lymphatic vessels or secondary to any trauma, surgeries, neoplasms, etc. However, if exact aetiology cannot be identified, the condition is referred to as Idiopathic chylopericardium which is a very rare presentation in day-to-day clinical practice. General physical examination, routine blood investigations and various anatomical imaging modalities may give a clue in the diagnosis, however, diagnosis can be challenging as they have a variable presentation. Also, optimal treatment poses greater difficulty as it remains controversial in most cases. We report a 47-year-old gentleman who presented with recurrent chylous pericardial effusion with no history of trauma, thoracic surgeries, cardiac disease and neoplasm in the past. Lymphoscintigraphy confirmed the communication between the lymphatic trunk and the pericardial space. The patient was managed conservatively with pericardial drainage and the patient recovered is doing well at present.

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Introduction

Chylopericardium is a pericardial effusion comprised of chyle, the normal content of the lacteals (lymphatics of the small intestine) and thoracic duct .Chylopericardium may be primary (idiopathic) or, much more often, secondary. The pericardial effusion appears milky white and opaque, with a triglyceride level greater than 500 mg/dl (5.65 mmol/l) and a cholesterol/ triglyceride ratio less than 1.Idiopathic chylopericardium (ICP) refers to the accumulation of chylous fluid in the pericardial cavity in the absence of any identifiable aetiology. It accounts for 56% of all chylopericardium cases (1). Secondary chylopericardium occurs as a result of complication of cardiothoracic surgery, trauma, infection, radiotherapy, mediastinal malignancies and rarely in acute pancreatitis (2). Most the patients with ICP remain asymptomatic, but few may present with life threatening symptoms such as cardiac tamponade (3).

Radionuclide lymphoscintigraphy is a procedure mainly used to map the lymphatic drainage of a particular area or region of interest. Even though considered as an indispensable tool for mapping the spread of tumour cell from a particular region, it has other important uses such as to distinguish lymphatic from venous oedema, assessing pathways of lymphatic drainage, identify lymphatic malformations, identifying patients at high risk for development of lymphedema after axillary lymph node dissection and in quantifying of lymphatic flow (4).

Case Report

A 47 year old man with history of recurrent chylous pericardial effusion was referred for radionuclide lymphoscintigraphy to rule out abnormal lymphatic connection to the pericardial space. The patient is apparently normal at present.

* *Corresponding author:* PK Pradhan,Department of Nuclear Medicine ,Sanjay Gandhi Post Graduate Institute of Medical Sciences, Rae Bareli Rd, Lucknow, Uttar Pradesh, India 226014. Tel: +91-522-2494617, +91-522-2494610; Fax: +91-522-2668017, +91-522-2668078; E-mail: pkp9918@gmail.com

He had undergone pericardiocentesis twice in the past (2012 & 2019). Pericardial fluid analysis revealed exudative fluid with 800 cells (100 % lymphocyte), fluid triglyceride -1240 mg/ml and fluid cholesterol -56 mg/dl fluid ADA level -12 U/L. He has also undergone anti tubercular therapy for 6 months. On examination: BP-138/88 mm of Hg and pulse: 87 bpm, CVS-S1, S2 normal, no murmurs. R/S- bilateral normal vesicular breath sound present, no crepts. ECHO (2019)- moderate pericardial effusion, no feature of cardiac tamponade, normal LV contractility.

The patient underwent whole-body radionuclide lymphoscintigraphy following an intradermal injection of 37 MBq (1 mCi) of Tc-99m Sulphur colloid in the first two web spaces of bilateral foot and serial of static images were taken at regular time interval. Injection in the web spaces of bilateral foot were done as the lymphatic status of the body was not known, keeping in view of the congenital anomalies in any other parts of the body rater than thoracic region only. Standard anterior and posterior whole-body images were obtained on a dual-head gamma camera (Infinia Hawkeye-II, GE Healthcare) with a low-energy high resolution (LEHR) collimator attached. Images were acquired on a 256×1024 matrix using a scan speed of 15 cm/min. SPECT/CT of the thoracic region was also obtained. Initial images revealed tracer uptake is seen at the injection site. In subsequent images tracer is seen ascending into the lower limbs bilaterally with symmetrical uptake with visualization of bilateral popliteal, inguinal and iliac lymph nodes and diffuse increased tracer uptake in the mediastinal region. Faint tracer uptake was also noted in liver and bilateral kidneys (Figure 1).

SPECT/CT of thoracic region reveals focal increased tracer uptake in pericardial lymph nodes (right lower paratracheal and prevascular) and also faint tracer uptake in pericardial cavity (Figure 2).

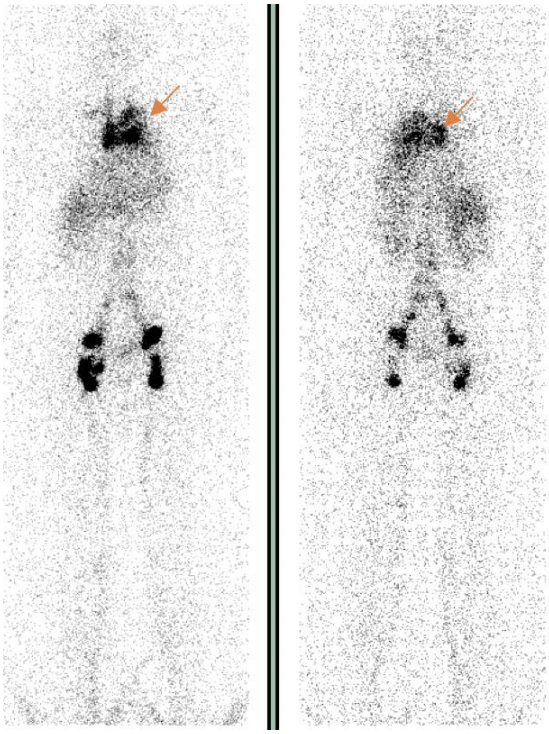

Figure 1. Anterior and posterior projection of the scan revealing increased uptake in the mediastinal region

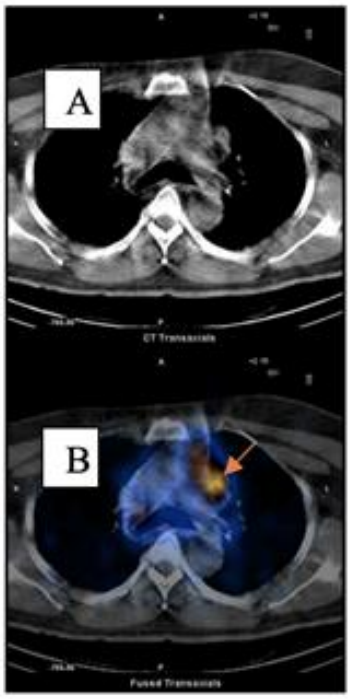

Figure 2. A, CT of the thoracic region, B, Fused SPECT/CT image of thoracic region revealing tracer uptake in the pericardial cavity

Discussion

ICP is a rare clinical condition characterized by the accumulation of triglyceride rich fluid in the pericardial cavity. It can occur in any age group and affects both sexes equally (5). Hasebrock was the first to describe the presence of 22.6 ml of chyle in the pericardial cavity, detected during the autopsy of a man who had died from asphyxia secondary to constriction and tracheal ulceration. The term “primary chylopericardium” was first used by Groves and Effler (5), who described a case of isolated accumulation of chyle in a 31-years-old woman who was found to have isolated, recurrent accumulation of chyle in the

pericardium associated with mediastinal cystic hygroma .

Aetiology remains unclear till date. Lymph leakage, damage to thoracic duct valves, presence of abnormal communication between the thoracic duct and the pericardial sac resulting in a retrograde reflux have been hypothesized as the possible mechanism for ICP (3). Diagnosis is confirmed by the milky yellowish appearance of the pericardial fluid, excessive fat droplet on microscopy and elevated triglycerides (>500 mg/dl) on pericardial fluid analysis (2). However diagnosis can also be established by non-invasively by radionuclide lymphoscintigraphy with sulphur colloid which can help in establishing communication between lymphatic system and the pericardial sac (6).

In our case, all the possible cause of secondary chylopericardium was excluded. There was a history of anti-tubercular therapy, but there was no clinical, microscopical or biochemical evidence of tuberculosis. For this reason, we concluded that these patients should be diagnosed with recurrent ICP.

Conclusion

Recurrent ICP is a rare condition with only ~100 cases reported worldwide to date. Exact aetiology for the cause of chylopericardium has to be evaluated extensively to prevent the complications of this disease and to decide the treatment plan. All patients should be followed up for a long period of time. Exact diagnosis can be achieved with analysis of the pericardial fluid, while lymphoscintigraphy can be useful for localising the site of chyle leak.

References

1. Dib C, Tajik AJ, Park S, Kheir MEL, Khandieria B, Mookadam F. Chylopericardium in adults: a literature review over the past decade (1996-2006). J Thorac Cardiovasc Surg. 2008 Sep; 136(3):650–6 .
2. Raza M, Matar K. Idiopathic chylothorax and chylopericardium resistant to conservative and surgical management. Heart Lung Circ. 2009 Jun; 18(3):229–32 .
3. Öztürk S, Durmuş G, Ağuş HZ, Koç HA, Can MM. A rare cause of pericardial tamponade: Chylopericardium. Anatol J Cardiol. 2017 Jun; 18(6):E11–2 .
4. Szuba A, Shin WS, Strauss HW, Rockson S. The Third Circulation: Radionuclide Lymphoscintigraphy in the Evaluation of Lymphedema. J Nucl Med. 2003 Jan 1; 44(1):43–57 .
5. Groves LK, Effler DB. Primary chylopericardium. N Engl J Med. 1954 Mar 25; 250(12):520–3 .
6. Wang C-H, Hung M-J, Cherng W-J, Yen T-C, Ng K-K, Lee C-M. Pedal ^{99m}Tc-Sulfur Colloid Lymphoscintigraphy in Primary Isolated Chylopericardium. Chest. 2000 Feb 1; 117(2):598–601.