

## CAS CLINIQUE / CASE REPORT

# PULMONARY ARTERY ACCELERATED FLOW REVEALING HODGKIN'S LYMPHOMA

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**ABSTRACT :** We present a case in which transthoracic echocardiography was the first diagnostic tool to suspect mediastinal Hodgkin's lymphoma by revealing a change in the hemodynamic of left pulmonary artery flow, and it was used as a follow-up method for monitoring treatment efficacy by demonstrating a normalization of pulmonary artery hemodynamics.

Keywords : echocardiography, Hodgkin's lymphoma, pulmonary artery stenosis

## CASE REPORT

A previously healthy 16-year-old girl, presented with a one-month history of progressive dyspnea on exertion markedly aggravated in the week prior to presentation by the onset of flu-like symptoms, and cough without fever, nocturnal sweating and weight loss. She was on no medication.

Her physical exam was unremarkable.

Laboratory tests revealed • microcytic hypochromic anemia (hemoglobin: 10.8 g/dl; MCV: 68 fl; MCHC: 22 pg) • elevated lactate dehydrogenase concentration (LDH: 1200 U/ml) • elevated C reactive protein (CRP: 25 mg/l) and • leucocytosis (WBC: 11,100/mm<sup>3</sup> with 87% neutrophils). Alpha-fœto protein (AFP) was low, beta 2 microglobulin was equal to 2.18 mg/l (normal 0.83-1.15 mg/l) and intradermal reaction test to tuberculin (IDR) was negative.

The resting 12-lead ECG revealed diffuse depolarization abnormality consisting of negative T waves in all pre-cordial leads. Chest X-ray revealed no abnormalities. A transthoracic echocardiography (TTE) was then performed, revealing moderate posterior pericardial effusion without tamponade, but an acceleration of left pulmonary artery (LPA) flow velocity to 2 m/s was detected (*normal velocity less than 1 m/s*). (Figures. 1, 2).

Helical computed tomography angiography of the thorax confirmed the presence of a mediastinal mass measuring 15 cm in large diameter compressing the left

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**RÉSUMÉ :** Nous présentons un cas dans lequel l'échocardiographie transthoracique a été le premier outil pour suspecter un lymphome de Hodgkin médiastinal en révélant un changement dans l'hémodynamique au niveau de l'artère pulmonaire gauche. Il a été utilisé pour suivre l'efficacité thérapeutique en démontrant une réduction de la taille de la masse et une normalisation du flux sanguin dans l'artère pulmonaire gauche.

pulmonary artery and the left main bronchus (Figure 3). A mediastinoscopy and biopsy of the mass confirmed the diagnosis of Hodgkin's lymphoma and an ABVD (doxorubicin, bleomycin, vinblastine, dacarbazine) based regimen was initiated.

A TTE was performed three months later demonstrating a normalization of the LPA hemodynamics which pointed toward a good response to treatment confirmed by thoracic CT.

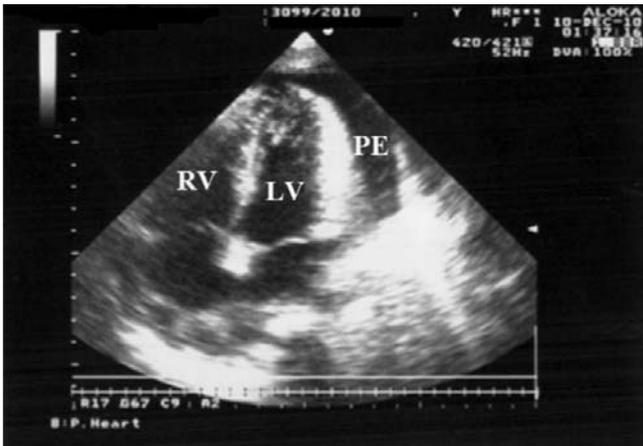
## DISCUSSION

Acquired symptomatic pulmonary artery stenosis (PAS) in adults is rare and is mainly due to external compression by mediastinal tumors [1]. In a literature review by Hugues *et al.*, fifty-one cases of acquired PAS were published before 2009 among which twenty-one were due to mediastinal lymphomas [2]. Even though lymphomas are commonly found in mediastinum, they do not frequently compress pulmonary arteries. This is mainly due to the fact that tumors tend to enlarge laterally, compressing thoracic aorta and superior vena cava, rather than antero-posteriorly [3]. Although vascular invasion by lymphoma has a poor outcome, prognostic significance of simple compression and flow limitation is unknown [4].

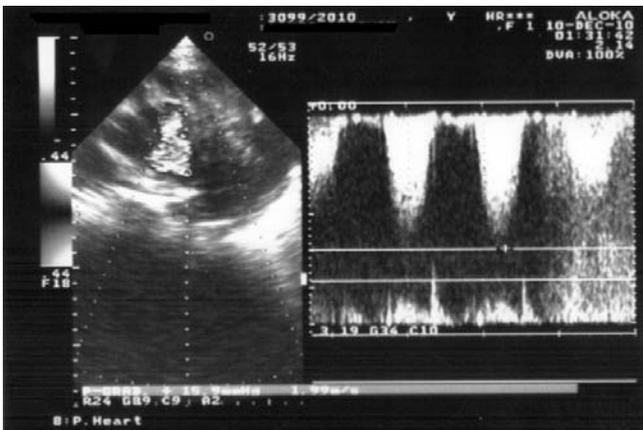
Thoracic CT is the gold standard for the detection of mediastinal masses and evaluation of vascular invasion but it cannot assess the hemodynamic severity of great vessel compression and its impact on the heart [5]. Transthoracic echocardiography enables dynamic investigation of cardiac and paracardiac structures and, assessed by Doppler interrogations, it may visualize the severity of great vessel compression ranging from minimal changes in velocity to severe pressure gradient abnormalities [6].

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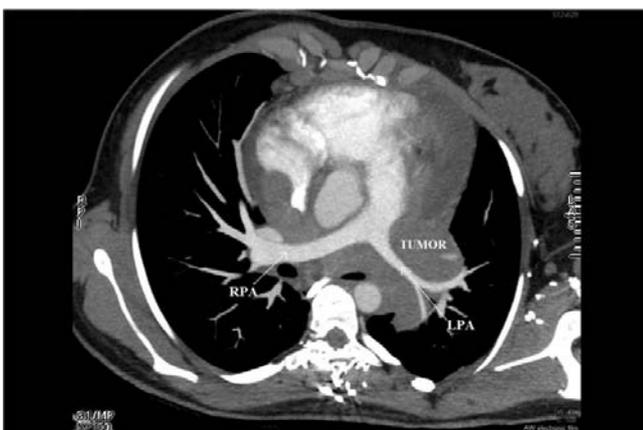
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**FIGURE 1.** Initial transthoracic echocardiography demonstrating moderate posterior pericardial effusion. (LV: left ventricle; PE: pericardial effusion; RV: right ventricle).



**FIGURE 2.** Initial transthoracic echocardiography with Doppler interrogations of the left pulmonary artery demonstrating mild acceleration of blood flow (v max: 2 m/sec) at the origin of the left pulmonary artery.



**FIGURE 3.** Helical CT angiography demonstrating a mediastinal mass compressing the main pulmonary artery and the left pulmonary trunk (RPA: right pulmonary artery; LPA: left pulmonary artery)

For this reason, it has been used by some authors as a diagnostic tool of acquired PAS, even without visualization of the mass itself [3,7], and by others for subsequent follow-up and post treatment assessment [5,6,8,9].

In this article we present the case of a young dyspneic patient with flu-like symptoms in whom pericardial effusion detected by transthoracic echocardiography could have led to the diagnosis of post infectious pericarditis; however, with Doppler interrogation of pulmonary artery flow we suspected a more serious condition, and Doppler flow imaging was used as a follow-up tool of Hodgkin's lymphoma.

## CONCLUSION

Physicians using transthoracic echocardiography for the work-up of dyspnea should not omit focusing on pulmonary arteries flow dynamics despite finding a probable explanation of the symptomatology, even slight changes could mask serious conditions. Ultimately however, evaluation by helical or multidetector CT angiography followed by biopsy remains the standard for confirming the diagnosis and guide treatment.

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