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Vegetation image in fluoroscopy: A case report

Flöroskopi altında vejetasyon imajı: Bir olgu sunumu

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SUMMARY
Imaging of the presence of vegetation is critical in the diagnosis of infective endocarditis. Guidelines recommend echocardiography, computed tomography (CT) and nuclear imaging methods for this purpose. In this paper, a case of fungal endocarditis is presented. Our case was a 45-year-old male patient who was connected to mechanical ventilator as a result of industrial accident and followed with central venous catheter. The patient had no previous history of valve disease. Echocardiography was performed on the patient with recurrent fever and dyspnea. Antifungal treatment was started for the patient who was diagnosed with fungal endocarditis, but valve surgery was planned since vegetation grew despite the treatment. During preoperative coronary angiography, vegetation on the aortic valve could also be monitored by fluoroscopy. The patient was operated four weeks after diagnosis and was discharged eight weeks after operation with complete recovery. In our literature review, there were no reports regarding vegetation monitored under fluoroscopy. According to the data we obtained, this paper is the first report showing that a vegetation is seen by fluoroscopy.
Keywords: Infective endocarditis, vegetation, echocardiography, fluoroscopy

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ÖZET
Enfektif endokardit tanısında vegetasyon varlığının görüntülenmesi kritik önem taşır. Kılavuzlar bu amaçla ekokardiyografi, bilgisayarlı tomografi (BT) ve nükleer görüntüleme yöntemlerini önermektedir. Bu bildiride bir fungal endokardit vakası sunulmuştur. Olgumuz, 45 yaşında endüstriyel bir kaza sonucu mekanik ventilatöre bağlı ve santral venöz kateter ile takip edilen erkek hastaydı. Hastanın daha öncesinde kapak hastalığı öyküsü yoktur. Tekrarlayan ateşleri ve dispnesi olan hastaya ekokardiyografi yapılmıştır. Fungal endokardit tanısı alan hastaya antifungal tedavi başlanmış fakat tedaviye rağmen vejetasyon büyüdüğü için kapak cerrahisi planlanmıştır. Ameliyat öncesi yapılan koroner anjiografi esnasında aort kapak üzerindeki vegetasyon floroskopik olarak da izlenebilmiştir. Hasta tanıdan dört hafta sonra ameliyat edildi ve ameliyattan sekiz hafta sonra tam iyileşme sağlanarak taburcu edildi. Literatür taramamızda floroskopi altında vegetasyon izlenildiğine dair bildirime rastlanmamıştır. Elde ettiğimiz verilere göre bu bildiri bir vegetasyonun floroskopik olarak görüldüğünü gösteren ilk bildiridir.
Anahtar sözcükler: Enfektif endokardit, vegetasyon, ekokardiyografi, floroskopi

INTRODUCTION

Infective endocarditis is defined as an infection of natural or prosthetic heart valves, cardiac pacemaker apparatus, and mural endocarditis [1]. It is an infrequent disease with high mortality rate and should be evaluated immediately from the moment it is suspected [2]. Several microorganisms, including bacteria and fungi varieties, play a role in its etiology. Since the determination of the source of infective endocarditis, its diagnosis and treatment are very difficult, imaging of the vegetation is of

great importance in diagnosis and response to treatment [3]. According to current guidelines, transthoracic and transesophageal echocardiography is the first imaging method that should be applied for infective endocarditis. The European Heart Association recommends imaging methods such as 18F-FDG PET/CT (Fluorodeoxyglucose positron emission tomography), labeled leukocyte SPECT/CT (Single photon emission computed tomography) and cardiac CT as alternatives to echocardiography for imaging of infective endocarditis. Positive findings obtained from these imaging methods are also considered among the major Duke criteria as in echocardiography [4]. Fluoroscopy is not included among the imaging methods that Duke Criteria are based on. The characteristic of our case is that it proves that vegetation can be seen under fluoroscopy.

CASE

A 45-year-old male patient underwent surgery due to an industrial accident and was connected to a mechanical ventilator. During the follow-up of the patient in the intensive care unit, a central venous catheter route was used. The patient developed fever, shortness of breath, and chest pain after leaving the mechanical ventilator that was suggestive of infective endocarditis. Transthoracic echocardiography was planned due to regurgitant murmur on the aortic valve during auscultation. Echocardiography revealed an image that complies with 6x8 mm vegetation on the aortic valve right coronary cuspis (Figure 1). There was no structural or functional pathology was observed in other heart valves. *Candida Tropicalis* growth was detected in the cultures of serially collected blood from the patient. Despite the antifungal treatment that continued for four weeks, the mass compatible with vegetation did not shrink and even reached 10x12 mm. Growth in blood culture according to Modified Duke Criteria and detection of vegetation in transthoracic echocardiography provided two major diagnostic criteria and confirmed the diagnosis of infective endocarditis. Transesophageal echocardiography was not planned due to the apparent vegetation in transthoracic echocardiography. Because of the continued growth of vegetation in serial echocardiography follow-ups despite antifungal treatment, surgery was planned 4 weeks after diagnosis. The patient underwent coronary angiography preoperatively and he had a vegetative image due to endocarditis on the native aortic valve under fluoroscopy (Figure 2). The patient underwent mechanical aortic valve replacement and vegetation material was removed (Figure 3). The patient receiving caspofungin for eight weeks postoperatively was discharged with complete recovery upon lack of growth in serial blood cultures and vegetation on echocardiography.

DISCUSSION

Infective endocarditis is difficult to diagnose and treat and has a long follow-up period. Therefore, guidelines have been published to facilitate the management of infective endocarditis [4]. Echocardiography is the first imaging method in diagnosis. Aneurysm of the valve, perforation, vegetation, abscess, pseudoaneurysm, intracardiac fistula, and newly developed dissociation of the prosthetic valve are echocardiography findings that are among the major Duke criteria [4]. Echocardiography may be insufficient in small lesions especially in the presence of perivalvular separation in prosthetic valves and intracardiac device [5]. Therefore, it should be repeated within one week in such cases with high suspicion of infective endocarditis [4]. Alternative imaging methods to echocardiography that included in other major Duke criteria FDG PET/CT, labeled leukocyte SPECT/CT, and cardiac CT should be kept in mind. Cardiac CT should be the next step, especially for perivalvular involvement identified on echocardiography. Infective endocarditis morphology in cardiac CT is pseudoaneurysm, vegetation, and abscess seen in endocardial tissue. Cardiac CT may show lesions that can be missed in transesophageal echocardiography due to acoustic shadowing formed by the prosthesis and calcific valves. In Cardiac CT, possible thromboembolic events due to coronary anatomy, perivalvular endocarditis involvement and vegetation are evaluated without the need for high-dose contrast agent administration to patient [6]. Fluoroscopic examination is only helpful in evaluating valve movements in prosthetic valve endocarditis. On the other hand, calcification on native valve which is the result of intense inflammation can hide vegetation [7]. Fluoroscopy can be useful at this point. However, in our literature review, no reports of fluoroscopy in vegetation imaging were found. In this paper, a vegetation image was seen on fluoroscopy. In the imaging of vegetation due to infective endocarditis, in addition to transthoracic echocardiography, transesophageal echocardiography and computed tomography, fluoroscopy may be another option as in our case.

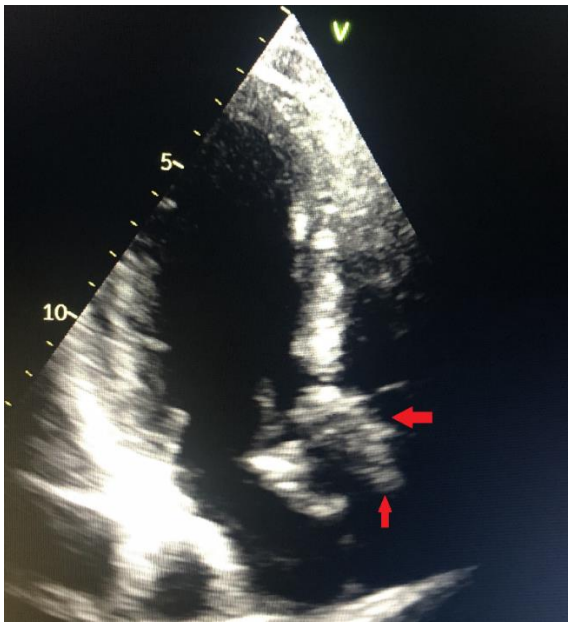

Figure 1: Vegetation on the aortic valve in transthoracic echocardiography

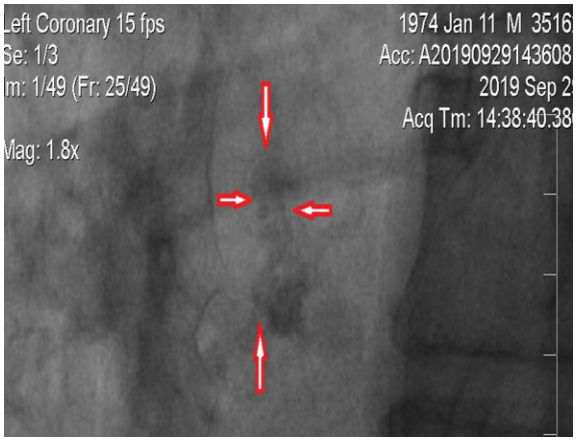

Figure 2: The image of vegetation under fluoroscopy

Figure 3: Vegetative material on the aortic valve after the operation

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