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Dialysis Catheter Induced Tricuspid Valve Protrusion And Tricuspid Regurgitation With Double Jet Flow

Diyaliz Kateterine Bağl Triküspit Kapak Protrüzyonu ve Gelişen Çift Jet Akımlı Tiküspit Yetmezliği

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Abstract

In routine dialysis patients, dialysis can be provided through temporary or permanent dialysis catheters and dialysis fistulas. Dialysis catheters can be inserted via transjugular, subclavian or femoral vein. Catheter malpositions, pneumothorax, catheter induced trombosis and infections, superior vena cavae perforation, superior vena cavae syndrome and pulmoner embolism are reported complications after subclavian and transjuguler catheter placements. Here, a rare case with tricuspid valve destruction due to dialysis catheter and tricuspid valve regurgitation with double jet flow is presented.

The 67-year-old female patient with known diagnoses chronic kidney failure (CKD), atrial fibrillation (AF), heart failure (HF) and coronary artery disease (CAD) was hospitalized with pre-diagnosis of NSTEMI for the cause of syncope and troponin elevation. After diagnostic coronary angiography, percutaneous coronary intervention (PCI) was performed to the circumflex (CX) artery. Echocardiography showed that the permanent dialysis catheter tip was protruding into the tricuspid valve orifice and had two separate tricuspid jet flows. There is no vegetation was observed on the valve or catheter tip. Verification of the current findings was planned with cardiac MR. As a result of MRI, it was determined that the catheter tip was in contact with the tricuspid anterior leaflets medial part and accordingly, moderate to severe regurgitation flow was observed. The patient was referred to cardiovascular surgery to reposition or replacement of the hemodialysis catheter.

The aim of these case report is especially in subclavian and transjugular catheter interventions, should be planned to examine the patients for catheter-related tricuspid valve pathologies, routine chest x-ray and if necessary control echocardiography should be done at suspicious views of the position of the catheter tip.

Öz

Rutin diyaliz hastalarında diyaliz işlemi geçici veya kalıcı diyaliz kateterleri ve diyaliz fistülleri aracılığıyla sağlanabilmektedir. Kateterler girişimi sonrasında katetermalpozisyonu, pnömotoraks, kateter ilişkili trombozlar, enfeksiyonlar, superior vena kava perforasyonu ve pulmonerembolizm bildirilen komplikasyonlardandır. Burada diyaliz katatterine bağlı triküspit kapak destrüksiyonu ve sonucunda nadir olarak görülen çift jet akımlı triküspit kapak yetmezliği gelişmiş bir olgu sunulmaktadır.

67 yaşında kadın senkop ve troponin yüksekliği olması nedenli NSTEMI kliniği ile

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kliniğimize yatırıldı. Yapılan koroner anjiyografi sonucundan sirkumfleks arterine perkutan girişim uygulandı. Yapılan ekokardiyografi sonucunda kalıcı diyaliz kateter ucunun triküspid kapak orifisineprotrude olduğu ve iki ayrı triküspit jet akımı olduğu görüldü. Kapakta veya katater ucunda vejetasyon izlenmedi. Kardiyak MR ile mevcut bulguların doğrulanması planlandı. Çekilen MR sonucunda kateter ucunun triküspidanteriorleafletmediyal kısmı ile temas halinde olduğu ve buna bağlı olarak orta-ciddi yetmezlik akımının gözlendiği saptandı. Diyaliz katateri̇ninrepozisyonu açısından kalp damar cerrahisine yönlendirildi.

Bu olgunun amacı, özellikle subklaviyen ve transjuguler uygulanacak olan kateter uygulamalarında mutlaka rutin akciğer grafisi çekilmesi, kateter ucunun konumuna bakılarak şüpheli olan olgularda mutlaka kontrol ekokardiyografi çekilerek kateter ilişkili triküspit kapak patolojileri açısından tetkik edilmesi ve gereğinde kateterinrepoze edilmesi planlanmasıdır.

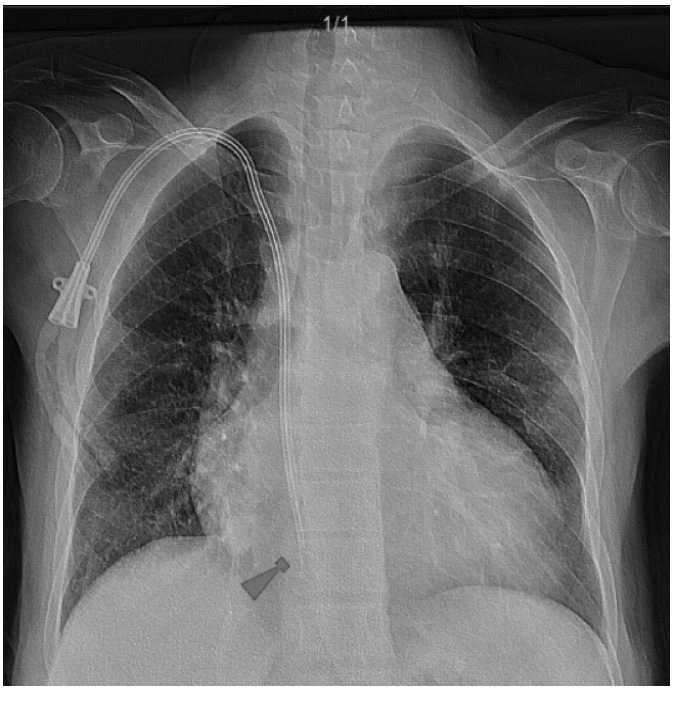
Introduction

Various catheter-related complications have been reported in dialysis patients, which constitute additional comorbid conditions to the current clinical situation. But secondary tricuspid regurgitation with double jet flow due to excessive advancement of the catheter is a rare complication. Here, we present a rare case with tricuspid valve destruction due to dialysis catheter and tricuspid valve regurgitation with double jet flow. But if it is kept in mind, its diagnosis and clinical treatment is possible.

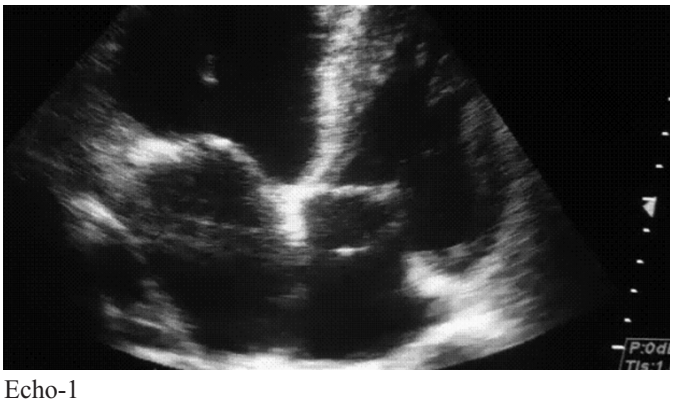
Case Report

The 67-year-old female patient with known diagnoses chronic kidney failure (CKD), atrial fibrillation (AF), heart failure (HF) and coronary artery disease (CAD) was hospitalized to the intensive care unit (ICU) with pre-diagnosis of NSTEMI for the cause of syncope and troponin elevation. There was no st elevation on ECG. After diagnostic coronary angiography, percutaneous coronary intervention (PCI) was performed to the circumflex (CX) artery. On the chest radiograph the catheter seemed to be intracardiac and the level of the catheter tip was near to the tricuspid valve. (Figure-1) Echocardiography showed that ef: %20, there was moderate mitral regurgitation and moderate to severe tircuspid regurgitation, the permanent dialysis catheter tip was protruding into the tricuspid valve orifice and had two separate tricuspid jet flows (Video 1-2-3). It was observed that the second eccentricity jet flow originated from the region where the catheter tip was protrude to the valve. There is no vegetation was observed on the valve or catheter tip. Verification of the current findings was planned with cardiac MR. As a result of MRI, it was determined that the catheter tip was in contact with the tricuspid anterior leaflets medial part and accordingly, moderate to severe regurgitation flow was observed (Video 4-5-6-7). The patient was referred to cardiovascular surgery to reposition or replacement of the hemodialysis catheter.

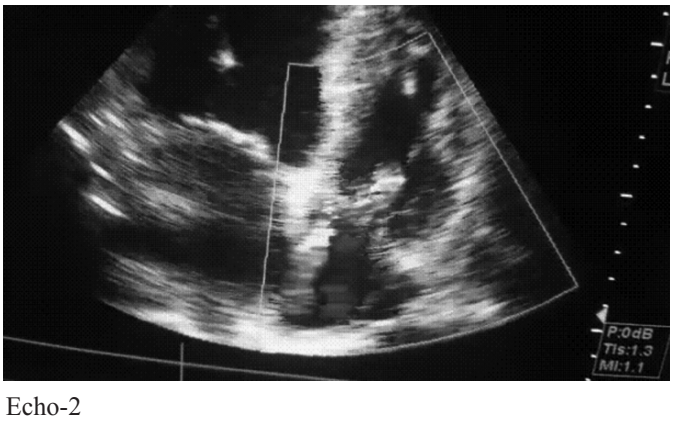
Discussion



Figüre-1



Echo-1



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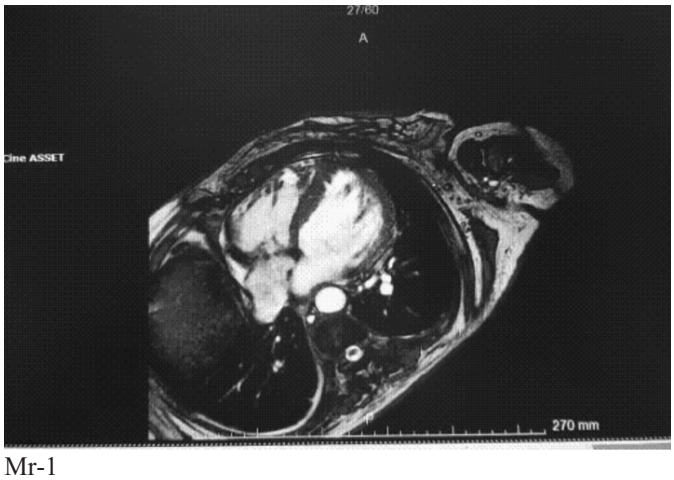
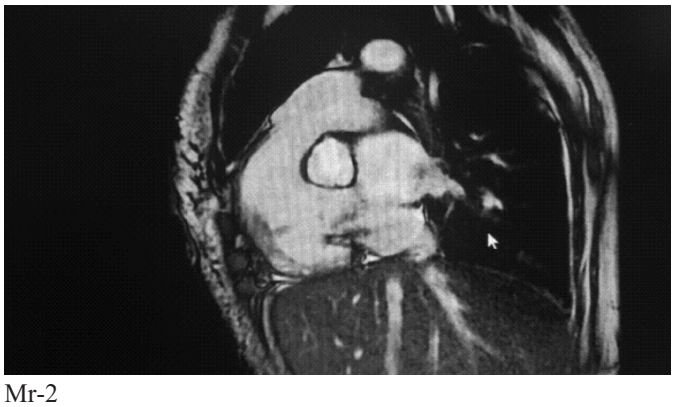


Mr-1


Mr-2

Interventional complications are seen with central venous catheter requirement in routine hemodialysis patients. Catheter malpositions, pneumothorax, catheter induced trombosis and infections (1), superior vena cavae perforation (2), superior vena cavae syndrome and pulmoner embolism (3) arterial misplacement of the dialysis catheter (4) are reported complications after subclavian and transjuguler catheter placements.

In our case report, tricuspid valve insufficiency developed due to excessive advancement of dialysis catheter or catheter size-patient mismatch. As well as our patient, If the patient has additional diseases such as heart failure or valvular disease, a careful evaluation is required in detect to the etiology of tricuspid failure. Seeing double regurgitation jet flow and tricuspid valve contact of the catheter tip on echocardiography is the factor suggesting that current tricuspid regurgitation is the catheter-induced. The contact of the catheter tip to the atrial face of valve and even the protrusion of the ventricular area with diastole may affect valve function and also destruct the anatomical structure of the valve. This can cause tricuspid valve cleft and permanent tricuspid insufficiency. Advancing the catheter tip to intracardiac areas also predisposes a risk for infective endocarditis. (5) The signs of inflammation seen in the catheter exit site, redness or purulent discharge, pathogen-specific results of blood cultures, increased fever and infective parameters are clues that suggest endocarditis. In such patients, If tricuspid insufficiency reaches serious levels, it may progress to right heart failure. While patients with chronic renal failure and have right heart failure clinics and are examined for left heart failure and lung disease, also catheter complications should be considered, especially in patients with newly inserted catheter history. In suspected patients, auscultation of the murmurs in the heart, control chest x-ray and echocardiography, and using upper step diagnostic tools such as transesophageal echocardiography or cardiac magnetic resonance imaging should be used to confirm the diagnosis. Careful examination of suspected patients and not to neglect the chest x-ray, which is a simple examination, is important in diagnosis.

For all these reasons, it should be kept in mind that complications related to tricuspid valve contact of the catheter in dialysis patients..

Conclusion

In patients undergoing catheter intervention via right superior vena cava, should be planned to examine the patients for catheter-related tricuspid valve pathologies, routine chest x-ray and if necessary control echocardiography should be done at suspicious views of the position of the catheter tip.

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