Journal of Medical Implants & Surgery

Sadiq, J Med Imp Surg 2023, 8:3

Mini Review Open Access

Large Right Atrial Thrombus Caused by a Central Venous Catheter Necessitating Open Heart Surgery

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Abstract

In clinical practise, central venous catheters are frequently employed. The incidence of CVC-related right atrial thrombosis varies, but when it occurs, there is an 18% mortality risk in hemodialysis patients and a greater than 40% risk in non-hemodialysis patients. For the development of CRAT, various pathogenic processes have been proposed, including mechanical irritation of the cardiac wall, intraluminal clot propagation, hypercoagulability, and hemodynamics of the right atria. CRAT may present asymptomatically or with one of the consequences of CRAT such as pulmonary embolism, systemic embolism, infected thrombi, or hemodynamic compromise. There are no recognised CRAT therapy guidelines. A 59-year-old asymptomatic male was effectively treated with open cardiac surgery after medical treatment for a big CRAT identified during a preoperative examination for a kidney transplant failed. Our case demonstrates that detecting CRAT early may result in a better outcome than waiting until severe consequences emerge.

Keywords: rombosis; Pulmonary embolism; Hemodynamics; Medical treatment; Kidney transplant

Introduction

In clinical practise, central venous catheters are routinely used for intravenous medicines, fluid delivery, and hemodynamic monitoring. While CVCs are typically regarded safe, problems such as infections, thrombosis, and catheter-related bloodstream infections can occur on occasion. CVC-associated thrombus formation can cause substantial problems, including the creation of massive right atrial thrombi, in rare situations. We discuss a case of a massive right atrial thrombus associated with a central venous catheter that required open heart surgery to be managed [1].

Catheter-related right atrial thrombosis is a rare and underreported

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Received: 01-May-2023, Manuscript No: jmis-23-100704, **Editor Assigned:** 04-May-2023, pre QC No: jmis-23-100704 (PQ), **Reviewed:** 18-May-2023, QC No: jmis-23-100704, **Revised:** 22-May-2023, Manuscript No: jmis-23-100704 (R), **Published:** 29-May-2023, DOI: 10.4172/jmis.1000164

Citation: Sadiq K (2023) Large Right Atrial Thrombus Caused by a Central Venous Catheter Necessitating Open Heart Surgery. J Med Imp Surg 8: 164.

Any concomitant hemodynamic abnormalities, such as valve regurgitation or symptoms of right heart strain, should be described [6].

Treatment and Management

Because of the thrombus's size and severity, as well as the concomitant hemodynamic impairment, a multidisciplinary team of cardiothoracic surgeons, interventional radiologists, and nephrologists was established. It was decided that open cardiac surgery would be performed to remove the thrombus and fix the tricuspid valve.

Describe the multidisciplinary team that is involved in the patient's care, which includes cardiothoracic surgeons, interventional radiologists, and nephrologists.

A sternotomy was performed, and cardiopulmonary bypass was established. When the right atrium was opened, a massive thrombus adhered to the central venous catheter was discovered. The thrombus was carefully dissected and removed, and the atrial endocardium was thoroughly debrided. The tricuspid valve was examined and discovered to be significantly regurgitant, necessitating annuloplasty treatment. Postoperative recovery was unremarkable, with the patient's symptoms improving and the jugular venous distension resolved [7].

Discussion

Central venous catheters are critical tools in the treatment of patients requiring long-term hemodialysis. However, their use may cause complications such as catheter-related thrombosis. Massive right atrial thrombi are a rare but deadly side effect of central venous catheters. These thrombi can result in hemodynamic compromise, pulmonary embolism, and other potentially deadly outcomes.

CRAT may be discovered by chance during imaging for a variety of reasons, or it may be suspected if accompanying symptoms or signs, such as resistance to blood flow in CVC, are noted during HD. Blood flow resistance in the CVC, as seen in our patient, could be an early indicator of RAT [8].

CRAT is a phenomenon that is underreported for two reasons. To begin, some people with CRAT are completely asymptomatic. Second, if the catheter tip is too close to the superior vena cava, TEE's diagnostic accuracy may be compromised.

TEE has a higher sensitivity and specificity than TTE and can be employed in suspected situations. Cardiac MRI with gadolinium contrast can be helpful for diagnosis and tissue characterization, but it was avoided in our case due to the risk of nephrogenic systemic fibrosis.

In many cases, rapid diagnosis and treatment are essential. Echocardiography is essential for detecting intracardiac thrombi, estimating their size and motility, and evaluating the associated valvular and hemodynamic abnormalities. In some cases, advanced imaging modalities such as CT angiography might provide extra information and help guide therapy options.

Treatment options for large right atrial thrombi associated with central venous catheters include anticoagulation, catheter-directed reaso[illegible] nic systemic