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Case Report

Port-a-Cath Fragmentation Causing Recurrent Chest Pressure and Dizziness in an Elderly Man: A Case Report

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Abstract

Background: A port-a-catheter is a long-term vascular access device designed for patients requiring prolonged access to a large venous vessel. These devices are typically surgically inserted into the internal jugular vein, subclavian vein, or superior vena cava. **The Case:** A 71-year-old male with a history of follicular lymphoma in remission following treatment with six cycles of rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone (R-CHOP) presented with a 10-week history of intermittent chest pressure and dizziness. During a routine follow-up visit with his oncologist, a screening computed tomography (CT) scan revealed a fragmented port-a-catheter. The catheter fragment was coiled within the right and left main pulmonary arteries. The patient underwent fluoroscopic-guided retrieval of the fragment, resulting in complete resolution of his symptoms. **Conclusion:** Fractured port-a-catheters can migrate to the pulmonary arteries, leading to increased pulmonary pressure and irritation of the pulmonary endothelium. This can manifest as chest discomfort, chest pressure, dizziness, and episodic hypertensive emergencies. Prompt recognition, confirmation with imaging, and retrieval of the fractured catheter are crucial to prevent serious complications. Physicians should consider catheter fragmentation and migration as possible causes when diagnosing patients with similar symptoms who have a known indwelling port.

Introduction

A port-a-catheter is a long-term vascular access device commonly used in patients requiring prolonged access to large venous vessels such as the subclavian vein. It consists of a subcutaneous injection port connected to a central venous catheter (CVC), offering significant advantages for patients undergoing chemotherapy, including a lower risk of infection, reduced pain from repeated needle sticks, and prevention of peripheral venous damage caused by chemotherapy agents.1 Although port-a-catheter complications are relatively rare, a recent single-center retrospective study estimated the incidence of port-a-catheter fracture to be approximately 1.8%. Among these cases, migration of the fractured catheter to the pulmonary artery is exceedingly rare.2 We present an unusual case of a patient who experienced intermittent chest pain and dizziness due to a rare etiology.

The Case

A 71-year-old male with a history of grade 3a follicular lymphoma in remission following chemotherapy, thyroid cancer treated with radioactive iodine ablation, hypertension, and hyperlipidemia presented to his oncology office for a follow-up computed tomography (CT) scan to evaluate his follicular lymphoma. He had previously completed six cycles of rituximab, cyclophosphamide, doxorubicin, vincristine, and prednisone (R-CHOP), with a follow-up positron emission tomography (PET) scan confirming a complete response.

Highlights:

- It is important to ensure proper chemotherapy catheter placement, educate patients on device care, and perform routine maintenance and surveillance imaging to detect early signs of mechanical issues.
- A physician must be vigilant for symptoms like chest pain, dizziness, or arrhythmias in patients with port-a-catheters. Use imaging and ECG to confirm catheter fracture or migration.
- It is critical to stabilize symptomatic patients, retrieve the fractured catheter via endovascular techniques, and address complications such as thrombus formation or vascular irritation.

For the past 10 weeks leading up to his oncology visit, the patient reported experiencing intermittent chest pressure and dizziness. Ten weeks earlier, he had presented to the emergency department with burning chest discomfort. A comprehensive workup at that time revealed a negative D-dimer and troponin, an unremarkable complete metabolic panel, and a complete blood count showing mild, stable macrocytic anemia. A chest radiograph confirmed the presence of a port-a-catheter and showed no evidence of an acute cardiopulmonary process. He was discharged without any further intervention.

In the subsequent weeks, the patient experienced episodes of intense chest pressure, lightheadedness, and flushing, particularly with exertion, though occasional symptoms also occurred at rest. These episodes, lasting 2–5 minutes, resolved spontaneously. During these episodes, he measured his blood pressure using a

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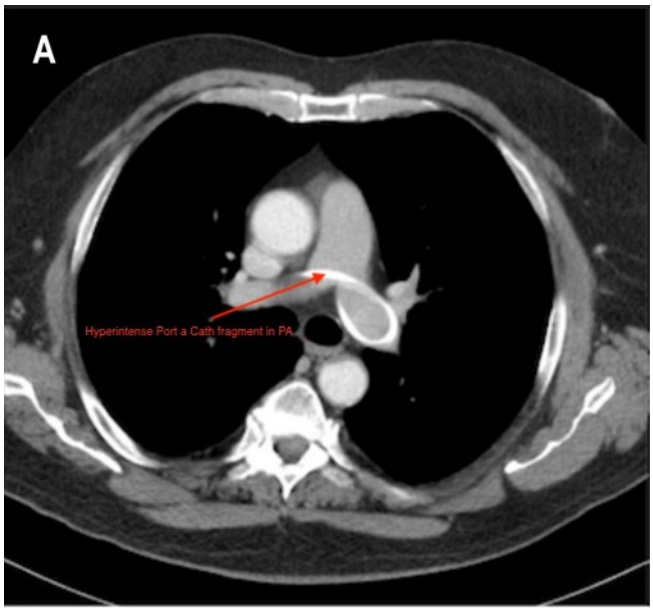
home monitor, frequently noting systolic pressures exceeding 170 mmHg. Prior to this, his hypertension had been well-controlled with carvedilol, losartan, and amlodipine, which he was still taking.

Figure 1. CT (Computed Tomography) Scan of Chest with Contrast, Axial View with Red Arrow Showing Fragmented Port-a-catheter.



The patient followed up with his cardiologist three weeks after his emergency department visit and was prescribed an ambulatory cardiac monitor. A stress test was recommended if the episodes persisted. In the following weeks, the patient continued to experience chest pressure, dizziness, and flushing. During one such episode, he recorded a systolic blood pressure greater than 210 mmHg for which he called the emergency medical services, but the episode resolved before paramedics arrived, and he declined transport due to symptom resolution.

Despite these recurring episodes, the patient did not believe the symptoms were significant, given his prior negative emergency department workup. He presented to his oncology office for a routine CT scan to evaluate his follicular lymphoma. The CT scan revealed no changes in lymphadenopathy but incidentally identified a fragmented port-a-catheter located in the main pulmonary artery and the proximal right and left main pulmonary arteries ***(Figure 1).***

The oncologist was immediately informed, the patient admitted, and an urgent referral to interventional radiology was made. The following day, the patient underwent successful retrieval of the Port-a-Cath fragment via percutaneous transcatheter retrieval using a snare device, performed under fluoroscopic guidance with femoral venous access. The procedure was well tolerated, and the patient suffered no adverse effects. Since the procedure, he has experienced no further episodes of chest pressure, dizziness, or flushing and has resumed his active lifestyle.

Discussion

The most common complications of chemotherapy catheters are infection, thrombosis, and mechanical malfunction (including fracture and embolization), with overall complication rates for Port-a-Caths in adults typically between 8% and 15%.[3] Catheter fracture and embolization are rare but recognized complications, most often related to the mechanical compression of the catheter between the clavicle and the first rib, typically when the catheter is inserted via the subclavian vein.[3,4] The risk is higher with percutaneous subclavian insertion compared to surgical cut-down.[4]

The most common cause of port-a-catheter fractures is device defects, followed by improper placement or access techniques, and patient-related factors. While many fractured port-a-catheters are asymptomatic, documented complications include arrhythmias, cardiac perforations, and thrombosis.[1,3-5] These findings underscore the importance of prompt retrieval of fractured catheters to prevent serious outcomes. Recent studies report a success rate of minimally invasive fractured catheter retrieval of approximately 96%.[6]

Although the exact cause of the fractured catheter in our patient remains uncertain, we suspect it resulted from a device defect. The catheter had functioned properly throughout the patient's chemotherapy cycles, and the patient denied any trauma or increased physical activity that could have contributed to the fracture. The resolution of chest pain and dizziness following the retrieval strongly suggests that the fractured catheter was the etiology of the symptoms.

The presence of the catheter fragment in the pulmonary artery likely caused direct endothelial irritation, leading to chest discomfort. Additionally, the coiled fragment may have increased pulmonary artery resistance, thereby elevating pulmonary artery pressure. Unlike carotid baroreceptors, pulmonary artery baroreceptors respond to increased pressure by enhancing sympathetic tone, resulting in vasoconstriction.[7] This mechanism likely played a role in the patient's recurrent hypertensive episodes, which manifested as chest pain and dizziness. Since the retrieval of the catheter fragment, the patient has remained symptom-free and has resumed his active lifestyle, including aerobic exercise.

This case highlights the rare but significant complication of port-a-catheter fracture with migration to the pulmonary artery. Although the incidence of such fractures is low, their potential to cause symptomatic complications underscores the need for prompt recognition and intervention. In this instance, the coiled catheter fragment in the pulmonary artery contributed to intermittent chest pain, dizziness, and hypertensive episodes through vascular endothelial irritation and increased pulmonary artery pressure. The successful removal of the fragment resolved the patient's symptoms, enabling him to return to his usual activities.

As a single-case, retrospective report, the findings are limited in generalizability and causal inference, with potential influences

from reporting bias. Additionally, the lack of long-term follow-up data restricts understanding of any delayed complications, emphasizing the need for larger, prospective studies. Nonetheless, this case provides valuable insight into an unusual clinical presentation and its associated risks. It emphasizes the importance of heightened clinical awareness of this complication in patients presenting with unexplained chest discomfort and hypertension, particularly those with a history of port-a-catheter placement. It also underscores the critical role of interventional radiology in safely managing these cases. Moving forward, efforts to reduce the risk of port-a-catheter complications should focus on ensuring device quality, employing meticulous placement techniques, and providing patient education on proper device care and potential warning signs.

Summary – Accelerating Translation

Title: Port-a-Cath Fragmentation Causing Recurrent Chest Pressure and Dizziness in an Elderly Man, A Case Study

Main Problem to Solve:

Some patients who undergo long-term treatments like chemotherapy receive a small medical device called a port-a-catheter, which helps deliver medications into the body. Although these devices are generally safe, they can sometimes break and fragments of the broken device may move into critical areas such as the lung's blood vessels, potentially causing chest pain, high blood pressure, or other serious complications.

Aim of the Study:

This study aimed to understand the issues that arise when a port-a-catheter fractures and a fragment migrates into the pulmonary artery. It also sought to demonstrate that a minimally invasive procedure can safely remove the fragment and resolve the patient's symptoms.

Methodology:

The study focused on a single patient who experienced chest pain, dizziness, and episodes of high blood pressure following a port-a-catheter fracture. Researchers reviewed the patient's medical history, symptoms, and diagnostic tests. They then hypothesized how the fragment in the lung's blood vessel might have led to these symptoms. Finally, they documented the process and outcome of a minimally invasive procedure performed by interventional radiology to remove the broken fragment.

Results:

The patient's symptoms, including chest discomfort and high blood pressure episodes, were strongly linked to the presence of the catheter fragment in the pulmonary artery. After the fragment was successfully removed using a minimally invasive technique, the patient experienced a complete resolution of symptoms and was able to return to normal daily activities. This outcome not only demonstrated the effectiveness of the removal procedure, but also highlighted the importance of early detection and intervention in such cases.

Conclusion:

This case study shows that although port-a-catheter fractures are rare, they can lead to significant health issues if the broken fragment migrates to critical areas like the pulmonary artery. The successful use of percutaneous transcatheter retrieval to retrieve the fragment provides evidence that prompt intervention can effectively resolve symptoms and prevent further complications. By understanding both the causes and the proper management of this complication, healthcare providers can better prevent, recognize, and treat similar cases in the future. This research emphasizes the need for careful device handling, proper placement techniques, and close monitoring of patients with port-a-catheters to ensure their safety and well-being..

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Conflict of Interest Statement & Funding

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Data Curation: TT, CF, MT, BJ. Formal Analysis: TT, CF. Investigation: TT, CF, MT, BJ. Supervision: TT, CF. Validation: TT, CF, MT, BJ. Visualization: TT, CF, MT, BJ. Writing - Original Draft: TT, CF, MT, BJ. Writing - Review Editing: MT, BJ.

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