Clinical Case Report

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A successful insertion of PICC in patient with cardiac angiosarcoma and neoplasty of right atrium and pacemaker

A case report

Bing Liu, RN, Wenyan Sun, RN*, Kai Wang, RN

Abstract

Introduction: Primary cardiac angiosarcoma is a rare tumor and the common treatment is surgical resection followed by chemotherapy. Peripherally inserted central venous catheters (PICCs) are widely used in cancer patients and ultrasound-guided PICC insertion could improve success rate especially in patient with abnormal anatomy structure. Reports about PICCs being placed in patient who had suffered from the cardiac angiosarcoma and neoplasty of right atrium with an ipsilateral cardiac permanent pacemaker are rarely.

After patient's informed consent, we present a case of the successful insertion of PICC into a patient with the ipsilateral cardiac disease with a pacemaker placement, which has not been previously reported.

Conclusions: This report highlights PICC could be used in patient with cardiac disease with a pacemaker placement for chemotherapy.

Abbreviations: PCA = primary cardiac angiosarcoma, PICC = peripherally inserted central venous catheter.

Keywords: cardiac angiosarcoma, neoplasty, peripherally inserted central venous catheter

1. Introduction

Angiosarcomas are rare malignant vascular tumor, which are treated by tumor resection and chemotherapy.[1,2] Peripherally inserted central catheters (PICCs) have been demonstrated to be a widely used intravascular access for chemotherapy in cancer patients.[3,4] The increasing demand for these devices has led to the development of nursing-based venous access teams who specialize in the bedside placement of PICCs. These teams are now common in many medical centers and ultrasound-guided PICC could also enhance the success rate of venipuncture.[5,6] Reports about PICCs being placed in patient who had suffered from the angiosarcomas and the neoplasty of the right atrium with an ipsilateral cardiac permanent pacemaker are rarely. We would like to share a case of the successful insertion of PICC into a patient with the ipsilateral cardiac disease with a pacemaker placement, which has not been previously reported.

2. Case presentation

A 53-year-old female with a medical history of angiosarcoma, neoplasty of right atrium, and ipsilateral cardiac permanent pacemaker placement was admitted to oncology ward for chemotherapy because of local recurrence. Her radiological findings are characterized by filling defects occupying the lumen of great vessels, and thickening of one of the heart chambers. PICC was considered for chemotherapy by physician. This patient had a cardiac permanent pacemaker on the right side and had received a PICC on the left upper extremity 2 years ago. Therefore, PICC nurses conducted a comprehensive assessment of patient's veins. There was no venous thrombosis in upper extremity veins and subclavian veins by ultrasonography. Considering that the pacemaker was located in the right side, a 4 Fr, single lumen PICC was firstly inserted at left upper extremity by qualified PICC nurse. Procedures were performed in full aseptic conditions according to routine operating-room protocols, and asepsis was obtained with 2% chlorhexidine. The ultrasound probe was covered by a sterile latex-free ultrasound-transducer cover kit. Patients were continuously monitored with electrocardiogram monitor, pulse oximetry, and noninvasive blood pressure. In keeping with infection control guidelines, patients did not received antibiotic prophylaxis routinely. Local anesthesia was achieved by site infiltration with 2% lidocaine. Using the electrocardiogram positioning of the tip location, the P wave showed no changes in the electrocardiogram. After taken the chest radiography, it was reported that the tip of the catheter was located at the subclavian veins of the left side. However, this

Editor: N/A.

The authors have no conflicts of interest to disclose.

Department of Parenteral and Enteral Nutrition, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China.

** Correspondence: Wenyan Sun, 1# Shuai Fu Yuan, Dongcheng District, Beijing 100730, China (e-mail: sunwenyan@pumch.cn).*

Medicine (2017) 96:51(e9225)

Received: 19 September 2017 / Received in final form: 19 November 2017 / Accepted: 21 November 2017

http://dx.doi.org/10.1097/MD.0000000000009225

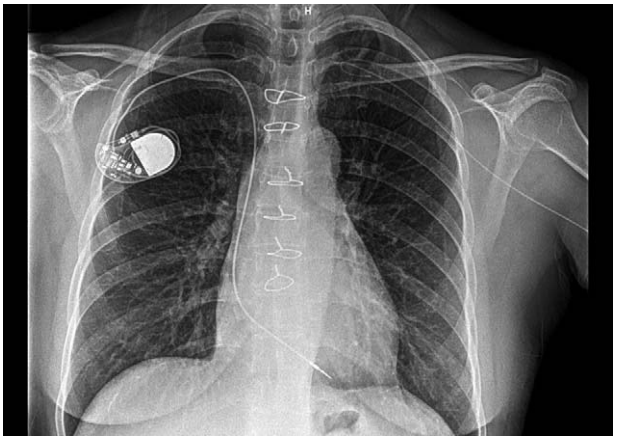

Figure 1. Chest radiograph demonstrating PICC tip located in the left subclavian vein.

insertion was failed (Fig. 1), and catheter was removed immediately. After a conscientious assessment of the veins, a new 4 Fr PICC was ready to be inserted at the right upper extremity in real-time ultrasound-guided insertion. During this insertion, catheter was also resisted and following a slightly pause during the fifth attempt, PICC nurse asked the patient to take a deep breath when catheter was inserting through the subclavian vein. After the catheter placed anticipated length, using the electrocardiogram positioning of the tip location, electrocardiogram showed bilateral P wave, that catheter too deep into the right atrium, immediately the catheter removal 3 cm, electrocardiogram displayed P wave elevation, in 50% to 60% QRS wave that was located on the bottom of the superior vena cava, fixed catheter, then taken the chest radiography, which was reported that the tip of the catheter was located at the seventh thoracic vertebra of the right side. This produced a successful catheterization while flushing normal saline. And patient's heart rate, blood pressure, and blood oxygen was stable. A postprocedure chest X-ray was performed to confirm that tip was located in distal superior vena cava (Fig. 2).

3. Discussion

Primary cardiac angiosarcoma is a rare tumor and the common treatment is surgical resection followed by chemotherapy.[1] PICCs are commonly used in cancer patients, with a relatively low rate of procedure-related trauma, bleeding, and bloodstream infection.[3] Ultrasound-guided PICC insertion could also improve success rate of catheter insertion in patient with ipsilateral cardiac permanent pacemaker.[7]

Reports about PICCs being placed in patient who had suffered from the angiosarcomas and the neoplasty of the right atrium with an ipsilateral cardiac permanent pacemaker are rarely. We would like to share a case of the successful insertion of PICC into a patient with the ipsilateral cardiac disease with a pacemaker placement, which has not been previously reported. The reason for the failure of the left side was concerned with the former catheterization which could cause vascular elasticity retraction and partial collapse. Thus, in a real-time monitor, the electrocardiogram positioning of the tip location, the P wave showed no changes in the electrocardiogram. And taken the chest radiography was reported the failure of the tip of the catheter of the left side.

Due to assessment of the anatomy structure by ultrasonography, we selected the right one for the insertion. After successful puncture, we met the rebound phenomenon to feed PICC catheter through ipsilateral subclavian position due to the pacemakers' wires occupying the space of subclavian vein and affecting the anatomy structure.

In order to avoid the rebound phenomenon at the entrance of the subclavian vein, to take a deep breath can reduce the pressure of thoracic cavity which can benefit the vein dilation. Flushing normal saline can force local blood vessels to dilate, allowing the PICC catheter to pass smoothly. At this time, the vein became easier to penetrate. Guided and monitored by ultrasound, the PICC catheter was fed slowly and smoothly passed through the subclavian vein. The procedure was successful.

In conclusion, we present a case of the successful insertion of PICC into a patient with the ipsilateral cardiac disease with a pacemaker placement. This report highlights PICC could be used

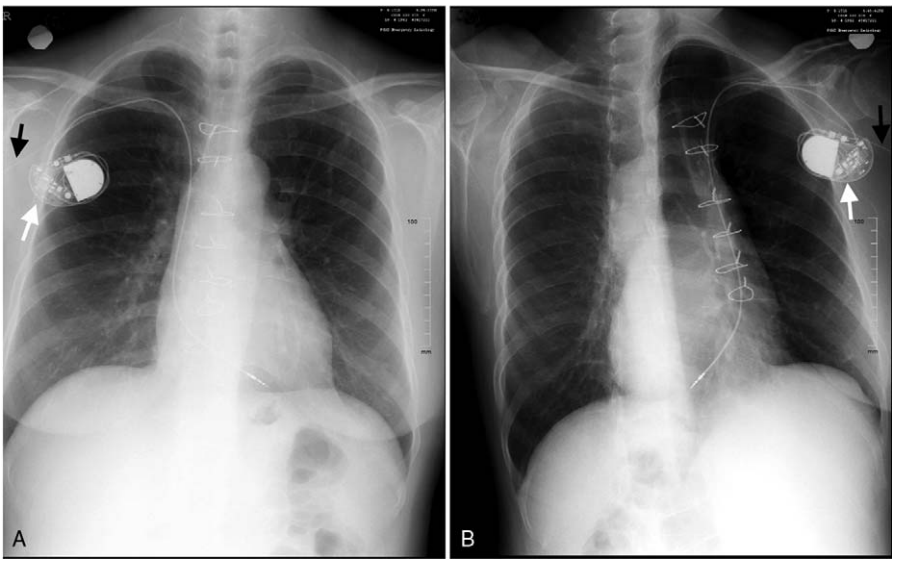

Figure 2. Postprocedural chest radiogram exhibiting the cardiac permanent pacemaker (white arrows) and PICC (black arrows).

in patient with cardiac disease with a pacemaker placement for chemotherapy.

Acknowledgment

The authors thank the patient for permitting us to report this case.

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