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Side effects and complication of Port-A-Cath

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Claudio Iannarone, Fabrizio Sacco, Marco Micozzi, Alessandra Fegiz, Silvia Fiorelli, Vincenza Vendittelli, Giovanni Pinto

II Facoltà di Medicina e Chirurgia, Azienda Ospedaliera "Sant'Andrea", Roma, Italy
UOC Anestesia, Rianimazione e Terapia Intensiva (Direttore: Prof. G. Pinto)

Side effects and complications of Port-A-Cath

Central venous catheter techniques find at present use for administering of NPT, for the drug injection (especially chemiotherapeutic drugs) because of the possible damage of a few substances when perfused in a peripheral way. At present port-a-cath find their most extensive use: these are systems which can be set up and tolerated for many months.
For the access to subclavian vein must be necessary put in supine decubitus, with light Trendelenburg position, with the opposite arm along the body and the head turned on the opposite side.
In this way the clavicle is in perpendicular position with regard to the sternal handlebar, except for patient affected with bpco, kypho-scoliosis, scapular-homeral arthrosis. In these patients the clavicle can put on a particular course, oblique and upper as to the sternal articular face.
So there is a serious obstacle to the passage to the metal needle under the clavicle.

KEY WORDS: Chemiotherapy, CVC, NPT, Port-a-Cath

Introduction

Using the word central venous access we mean great calibre veins, set in the thorax (usually the superior vena cava) and under the aponeurosis which are invisible but have size, position and almost invariable relationships among people.
Central venous catheter techniques developed first in the operating rooms, in the intensive care units and then in the NPT and onco-ematology units. New materials for these catheters have been introduced such as silicon, and polyurethane which are less traumatic for the venous endothelium and less trombogenic. Nowadays various scientific instruments are marketed: the standard venous catheters with a single lumen; the Hickman-Broviac catheters called "cap catheters"; the Groshgong catheter supplied with a valve (injection, occlusion at rest and suction: the main advantage is the suppression of air embolism or bleeding); port-a-cath (Censite, Sitimplant, etc)
The last one is a silicon catheter with a proximal tip which is connected to a low volume chamber which is set up in the subcutaneous tissue with a surgical procedure. Besides we can find on the market double chamber port-a-cath which can be used for incompatible drugs.
Various side effects due to a central venous access have been reported: failure (less of 5% cases for subclavian and less of 10% cases for jugular vein); arterial or venous

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Correspondence to: Claudio Iannarone (e.mail: claudio.iannarone@fastwebnet.it)

lesions (internal jugular: hemiplegia secondary to carotid puncture or tracheal compression due to an important hematoma). Subclavian vein: emothorax, pneumothorax, lymphatic ducts lesion (rarely), nervous lesions (usually for the jugular vein); wrong ways; cardiac perforation (using a stiff central venous catheter); catheter embolism (fragment from internal jugular or subclavian vein); air embolism (accidental air injection); infections complications (basic pathologies, age, drugs).

Case report

A fifty four years old woman, operated on September 2003 for cancer (right emicolectomy), histologically confirmed. It was given indication to install a cvc port-a-cath for chemiotherapy, by previous informed consent and blood test.
In the operating theatre the patient was positioned in supine decubitus, slight Trendelenburg, left arm abduced for the peripheral venous access and a pillow put under the right shoulder to open the retroclavicular angle.

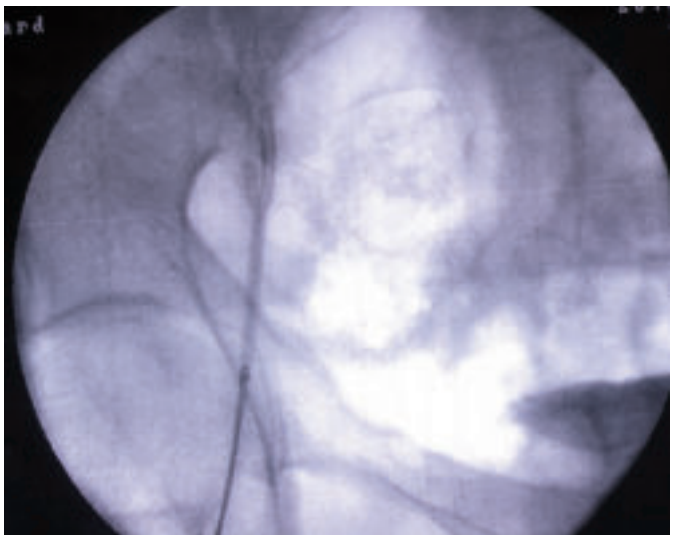

Fig. 1

Fig. 2

We used a small amount of local anaesthetic, Mepivacaine 2 %; for sedation with facial mask we used propofol both for induction and for maintenance with bolus, so improving the reduction of muscular tone.
Two unexpected events characterized the procedure:
1) the use of a soft metallic guide to make easy the passage through the rib-clavicular angle;
2) the catheter worked as long as the patient was in semi-supine position (to take blood samples and for the administration of fluids).
Afterwards the patient did a chest radiography.
On July 2006, last one control Rx showed the section of cvc tip: the fragment (seven centimetres long) was in right pulmonary artery and the proximal part of the cvc was in the superior emithorax out of subclavian vein.
The catheter embolism is a complication which can be asymptomatic but dangerous for the possible occurrence of FA, thrombosis, endocarditis, chemioterapeutics effusion. The patient was asymptomatic but urgently admitted to the hospital to remove the embolic fragment and the remaining part of the port-a-cath. Two radiological interventionists and an anaesthetist made up the crew. The fragment was removed from the pulmonary artery through a loop recover system (Amplatz "goose neck") introduced thanks to the puncture of femoral vein with Seldinger technique using a soft "J" wire. The procedure was executed under radiological control. We insert a 7

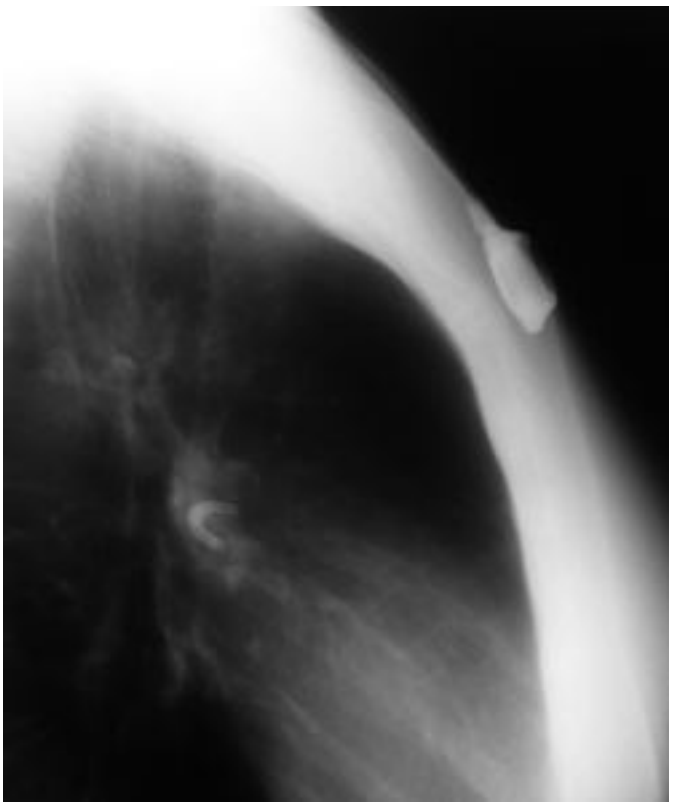

Fig. 3

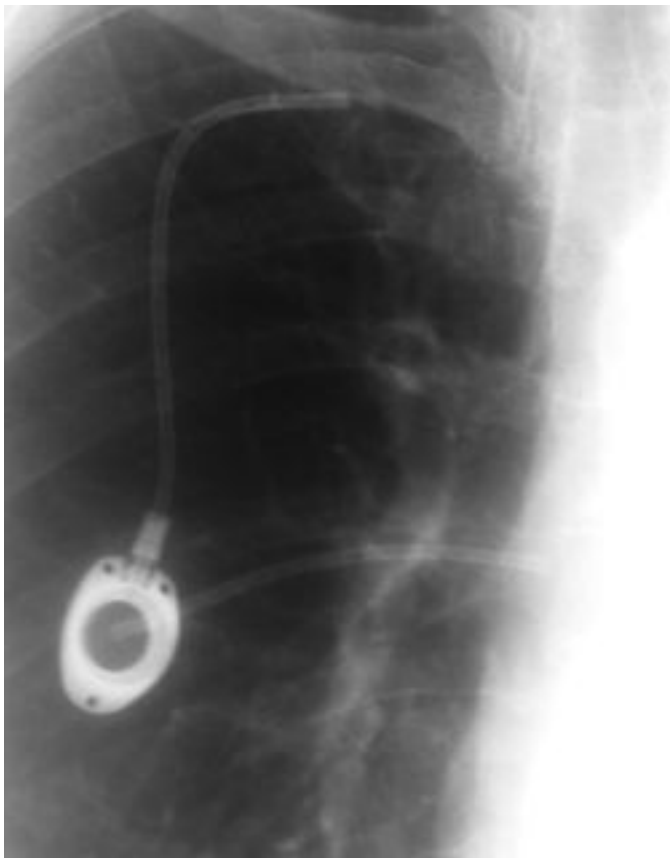

Fig. 4

Fr vascular introducer reaching inferior cava vein and pulmonary right artery. The recovered fragment was completely entire and after the removal of the remaining part of the port-a-cath a new Rx was executed.

Discussion and Conclusions

There are different materials for the venous catheters: polyethylene, teflon, polyurethane and silicone. The former are out of date also because the latter are less traumatic for the venous endothelium and the risk of thrombosis is reduced. Otherwise silicon compared to polyurethane is well tolerated both clinically and chemically and is widely used in spite of its fragility. Section of silicon catheters inserted in subclavian vein and compressed in the space between clavicle and the first rib has been reported; this event rarely happens and usually within some months.
A possible explanation of the complication we have reported can be due to the several attempts to force the obstruction of the silicon catheter under pressure: sometimes especially when the patient was sitting, the catheter was occluded. We realized that the occurred complication thanks to a chest radiograph even if in the previous three years were negative.
According to our experience we recommend to avoid manual attempts of disobstruction of a silicon port-a-cath system and eventually the use of substances that can be lithic for fibrin.

Riassunto

Le tecniche di Cateterismo Venoso Centrale trovano attualmente utilizzo per la somministrazione di Nutrizione Parenterale Totale, per l'iniezione di farmaci (soprattutto chemioterapici), a causa della lesività di alcune sostanze quando perfuse per via periferica, e per l'effettuazione di prelievi ematici. In particolare, attualmente, trovano il loro più esteso utilizzo i Port-a-Cath, cateteri a sito impiantabile.
Quando si effettua l'accesso alla vena succlavia, si posiziona il paziente in decubito supino in leggero Trendelenburg con il braccio omolaterale all'entrata lungo il corpo e con la testa rivolta dal lato opposto. In questo modo si deduce che la clavicola sia così in posizione perpendicolare rispetto al manubrio sternale.
Fanno eccezione pazienti affetti da BPCO, ciforotoscoliosi, artrosi scapolo-omerale: in questi la clavicola può assumere andamento obliquo, più in alto rispetto alla faccetta articolare dello sterno; tutto ciò crea un'ostacolo al passaggio dell'ago metallico sotto la clavicola.

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