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Case Report / Olgu Sunusu

Percutaneous Retrieval Of A Venous Port Catheter Embolizing To Pulmonary Artery With A Snare Loop Catheter; A Case Report And Review Of The Literature

Pulmoner Artere Embolize Olan Venöz Port Kateterinin Perkutan Yolla Çıkarılması; Olgu Sunumu Ve Literatürün Gözden Geçirilmesi

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ÖZET

Subkutanöz port kateter sistemleri uzun sureli vaya aralıklı infüzyon tedavi gereksinimi olan hastalarda giderek artan sıklıkta uygulanmaya başlamıştır. Farklı endikasyonlarla port sistemi kullanımının, aynı zamanda potansiyel olarak ciddi olabilecek birçok komplikasyona yol açtığı bildirilmiştir. Kateterin ayrılması ve embolizasyonu nadir görülen bir komplikasyon olmakla birlikte, tanısı konulduğunda kateterin çıkarılması gerekmektedir. Perkutanöz yaklaşım, minimal invavif, basit, güvenli ve konvansiyonel cerrahi seçeneklere gore daha düşük komplikasyon oranlarına sahip olduğundan altın standard tedavi yöntemi olarak kabul edilmektedir. Bu makalede tekrarlayan dirençli nöbetleri olması nedeniyle port kateteri takılan, takibinde kateterde ayrılma ve embolizasyon gelişmesi nedeniyle kateteri transvenöz yolla çıkarılan 2 yaşında bir kız hasta sunulmuştur.

Anahtar Kelimeler: ayrılmış port kateter, embolizasyon, snareloop kateter, çocuk

ABSTRACT

Subcutaneous port catheter systems are widely used with increasing frequency in patients requiring long-term or intermittant infusion therapy. Usage of port systems for a wide variety of indications also leads to well-documented wide spectrum of complications that can be potentially serious. Venous catheter dislodgement and migration is one of the rare complications of venous port implantation, however once diagnosed it must be removal of the catheter is indicated. Percutaneous approach for removal is considered a gold standard treatment because it is a minimally invasive, relatively simple, safe procedure, with low complication rates compared to conventional surgical treatment. In this report we present a 2-year-old girl who had a port catheter implanted because of recurrent intractable seizures and subsequently dislodgement and embolizing of entire catheter, which was removed with a snare-loop catheter via transvenous approach.

Key Words: detached port catheter, embolization, snare-loop catheter, child

INTRODUCTION

Subcutaneous port catheter systems have been widely used with an increasing frequency in the management of patients that require intermittent long-term infusion therapy. This technique has several advantages such as easier insertion, durability, no need for special care (such as heparin infusion) and improved patient satisfaction. However, more than 15 percent of patients who receive these catheters have mechanical (5-19%), infectious (5-26%) or thrombotic (2-26%) complications (1). Although the dislodgement and intravascular embolization of the catheter is uncommon, it can lead to potentially serious complications. Once dislodgement and embolization of the catheter is diagnosed, removal of the catheter is indicated. Percutaneous approach for intravascular foreign body removal is considered a gold standard treatment because it is a minimally invasive, relatively simple, safe procedure and it avoids the complications related to open surgical interventions (1-5).

With this article, we report a 2-year-old girl who had a port catheter implanted because of recurrent intractable seizures and subsequently dislodgement of entire catheter from the connection site to port embolizing to pulmonary artery. The catheter was removed with a snare-loop catheter via transvenous approach.

CASE REPORT

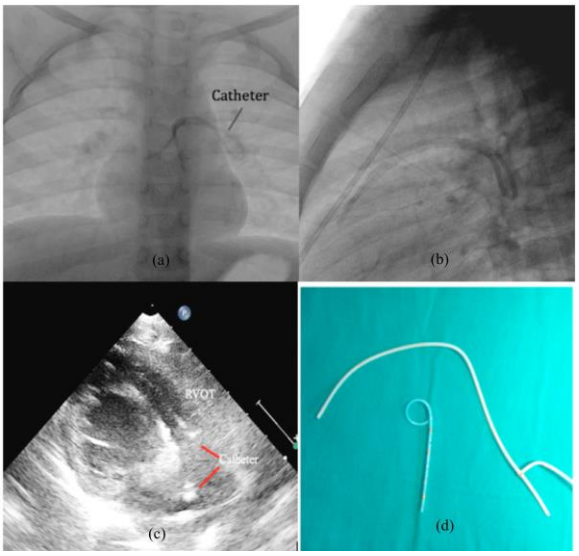
A 2-year-old girl was referred to our clinic because of entirely detached and embolized port catheter. The catheter was implanted 6 months ago because of recurrent intractable seizures and need for intravenous treatment. After realizing that the port catheter does not work, the surgeons decided to revise the catheter. She had no complaint during that time. Before the procedure a chest x-ray was enrolled and demonstrated the dislodged and embolized catheter. She was referred to our clinic in order to remove the port by transvenous approach. Physical examination of the patient was normal. Chest x-ray revealed that embolized long port catheter was in the pulmonary artery area, and echocardiography justified the finding (Figure-1). Electrocardiographic findings were normal. After placement of 7 Fr sheath to right femoral vein by Seldinger technique, 5 Fr right Judkins catheter was inserted and delivered to the pulmonary artery. Then the port catheter was caught with a 4 Fr snare-loop catheter (Amplatz GooseNeck™ snare)which was delivered through the 5 Fr right Judkins catheter and the whole system was retrieved from femoral venous sheath without any complication (Figure-1). A control echocardiography and electrocardiography were performed and displayed normal findings.

DISCUSSION

Subcutaneous port catheter systems are widely used with increasing frequency in patients requiring long-term or recurrent infusion therapy. Unfortunately, usage of port systems for a wide variety of indications also leads to wide spectrum of complications that are both hazardous to patients and expensive to treat. The main complications seen are bloodstream infection, venous thrombosis and also venous catheter migration (1,6,7). The incidence of intravascular embolization of venous catheters demonstrated in the medical literature corresponds to nearly 1% of all the reported complications and 0.1% of all insertions changing according to the centers (1). Teichgräber et al analysed the outcome of 3160 implanted port catheter systems and reported the overall complication and catheter migration rates as 11.8% and 1.3% respectively (7). Chuang et al. reported that the prevalence of port catheter dislodgement was 3.4%, whereas Wang et al reported 0.4%. (3,4)

Catheter malfunction or resistance to irrigation is the most likely signal of dislodgement or embolization. The common reasons for dislodgement of the catheter include bad connection between the port and catheter, angulation at the anastomosis site, severing the

catheter during insertion and removal of the catheter, improper catheter position and fatigue of the catheter (1,6,7). Patients are usually asymptomatic, however serious fatal complications such as thromboembolic events, fatal arrhythmia and infections can be seen (1,6). Mortality rate in catheter embolization is reported between 24-60% (8).



Once embolization of the catheter is diagnosed, removal of the catheter is indicated. The commonly accepted management of catheter embolization is percutaneous retrieval through a femoral approach. The first successful percutaneous retrieval of intravascular foreign body, where a fragment of broken guide wire was retrieved percutaneously from a patient's right atrium with a rigid bronchoscope forceps through a sheath, was reported by Thomas et al in 1964 (9). Subsequently application of this technique has been grown up and became as the first line method for retrieving foreign bodies. The loop snare is the most common device used to attempt removal of an intravascular foreign body (5). Snares have an excellent safety profile and are relatively atraumatic, simple to use and effective for achieving a good success rate of intravascular foreign body retrieval (2,3,5,8,10-12)

However, helical baskets, concurrent use of pigtail and snare catheter, snare and suture technique, ablation catheters and grasping forceps can be used in some patients in case of failure of loop snare catheter technique (2-5,7,13). Despite of all these techniques open surgical retrieval may be required in approximately 6–10 % of cases (5,14).

Complications during percutaneous retrieval is rarely seen and most common complication reported is transient arrhythmia generally requiring no medication (1-4).

Conclusion:

The rise in frequency of endovascular therapies also leads to increased rate of complications, including intravascular foreign bodies. The percutaneous approach has repeatedly been demonstrated to have a high success rate with a low associated morbidity, and it avoids complications related to open surgical approaches.

REFERENCES:

1. McGee DC, Gould MK. Preventing Complications of Central Venous Catheterization. N Engl J Med 2003;348:1123-33.
2. Cheng CC, Tsai TN, Yang CC, Han CL. Percutaneous retrieval of dislodged totally implantable central venous access system in 92 cases: experience in a single hospital. Eur J Radiol. 2009;69:346-50
3. Wang PC, Liang HL, Wu TH, Huang JS, Lin YH, Huang YL, Chou CP, Yang TL, Pan HB. Percutaneous retrieval of dislodged central venous port catheter: experience of 25 patients in a single institute. Acta Radiol. 2009;50:15-20.
4. Chuang MT, Wu DK, Chang CA, Shih MC, Ou-Yang F, Chuang CH, Tsai YF, Hsu JS. Concurrent use of pigtail and loop snare catheters for percutaneous retrieval of dislodged central venous port catheter. Kaohsiung J Med Sci. 2011;27:514-9
5. Woodhouse JB, Uberoi R. Techniques for Intravascular Foreign Body Retrieval. Cardiovasc Intervent Radiol (2013) 36:888–897
6. Kock HJ, Pietsch M, Krause U, Wilke H, Eigler FW. Implantable vascular access systems: experience in 1500 patients with totally implanted central venous port systems. World Journal of Surgery 1998;22(1):12- 6.
7. Teichgräber UK, Kausche S, Nagel SN, Gebauer B. Outcome analysis in 3,160 implantations of radiologically guided placements of totally implantable central venous port systems. Eur Radiol. 2011 Jun;21(6):1224-32
8. Barçın C, Kurşaklıoğlu H, Balta Ş, Küçük U, Demirkol S, Yıldırım V. Embolize olan Port-A-Cath kateterin perkütan yolla çıkarılması. Gülhane Tıp Derg 2013; 55: 231-233
9. Thomas J, Sinclair-Smith B, Bloomfield D, Davachi A. Non-surgical retrieval of a broken segment of steel spring guide from the right atrium and inferior vena cava. Circulation 1964; 30:106–108
10. Kapısız NS, Kapısız HF, Doğan OV, Kocakavak C, Yücel E. Central Venous Catheter Embolization: Case Report. Turkish J Thorac Cardiovasc Surg 2003;11:54-56
11. Liu JC, Tseng HS, Chen CY, Chern MS, Chang CY. Percutaneous retrieval of 20 centrally dislodged Port-A catheter fragments. Clin Imaging 2004;28:223-9.
12. Şenocak F, Örün UA, Ceylan Ö, Doğan V, Keskin M, Karademir S. Percutaneous Transvenous Removal of an Entire Detached Port Catheter by Using a Snare-Loop Catheter in a 13-Month-Old Child. İnönü Üniversitesi Tıp Fakültesi Dergisi 2011;18:263-5.
13. Teragawa H, Sueda T, Fujii Y, Takemoto H, Toyota Y, Nomura S, Nakagawa K. Endovascular technique using a snare and suture for retrieving a migrated peripherally inserted central catheter in the left pulmonary artery. World J Cardiol 2013; 26: 369-372
14. Wolf F, Schernthaner RE, Dirisamer A, Schroder M, Funovics M, Kettenbach J, Langenberger H, Stadler A, Loewe C, Lammer J, Cejna M. Endovascular management of lost or misplaced intravascular objects: experi- ences of 12 years. Cardiovasc Intervent Radiol 2008;31:563–568