

Spontaneous Migration of Long-Term Indwelling Venous Catheter: Case Report

Uzun Süreli Kalıcı Venöz Kateterin Spontan Migrasyonu

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ABSTRACT Long-term central venous catheters are important in patients with cancer and other debilitating diseases. Although there are early and late complications, with an overall rate of approximately 13%, migration of a central venous catheter is rare. In this case report, we report migration of a Hickman's catheter into the internal jugular vein, 25 days after satisfactory initial placement. The Hickman's catheter was then removed and repositioned properly under scopy using guide-wire. Periodic monitoring of catheter position with chest radiography can enable detection of migration early, interventional repositioning before thrombosis develops, and treatment to be made appropriately.

Key Words: In-dwelling catheters; catheter migration; jugular vein

ÖZET Kanserli ve düşkün hastalarda uzun süreli venöz kateterler önemlidir. Katetere bağlı erken ve geç komplikasyon oranı %13 olmasına rağmen santral venöz kateterlerin migrasyonu çok nadir bir komplikasyondur. Bu olgu sunumunda, başarılı bir şekilde yerleştirildikten 25 gün sonra Hickman kateterin internal juguler vene migrasyonu anlatılmaktadır. Hickman kateter çekilerek, skopi altında kılavuz tel eşliğinde uygun pozisyonuna yeniden yerleştirildi. Periyodik olarak kateter pozisyonunun akciğer grafisi ile kontrol edilmesi, migrasyonun erken fark edilmesine, tromboz gelişmeden kateterin yeniden yerleştirilmesine ve tedavinin uygun bir şekilde yapılmasına olanak sağlar.

Anahtar Kelimeler: Kalıcı kateterler; kateter migrasyonu; juguler ven

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Long-term central venous catheters are widely in use for chemotherapy and parenteral nutrition in patients with cancer and other debilitating diseases, because it is easier to obtain blood samples and administer chemotherapy drugs, antibiotics, blood products, fluids and nutrition.¹

Central line for chemotherapy could be one of two: one is non-implantable; tunneled, cuffed catheters such as Hickman catheter, and the other is totally implantable central venous access such as port-a-cath catheter.^{2,3} They are surgically inserted and fixed in the soft tissues of the chest wall to prevent infection. Complications associated with these catheters include infection, thrombosis, venous perforation, catheter break-

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age, dislodgment and fallout, subintimal catheter entrapment, and catheter tip migration to neighboring veins after satisfactory initial placement.^{4,5}

Spontaneous migration of port-a-cath catheters after satisfactory initial placement is uncommon, and associated with a number of complications, including neck, shoulder and ear pain, infection, venous thrombosis, and neurological complications depending on the location of the detached catheter.⁶

The present case illustrates migration of a Hickman's catheter into the internal jugular vein 25 days after satisfactory initial placement. We also present a review of the literature for such an unusual complication.

CASE REPORT

A 23-year-old male patient with the diagnosis of acute lymphoblastic leukemia has been decided to have allogeneic stem cell transplantation. For this procedure, a 13.5 French double lumen Hickman's catheter was inserted into the right subclavian vein under fluoroscopy. Then, the catheter was placed surgically and fixed to the subcutaneous tissues of the chest wall. The procedure was done under fluoroscopy, and X-ray confirmed the desired position of the catheter tip after insertion (Figure 1). Twenty five days after insertion, repeated X-ray showed the catheter tip in the cephalad direction in the right internal jugular vein (Figure 2). The patient was asymptomatic, and there was no swelling or any other evidence of fluid extravasation. The Hickman's catheter was removed. Then, the new catheter was inserted and positioned properly under scopy using guide-wire. The patient underwent stem cell transplant successfully, and was discharged in good condition.

DISCUSSION

Central venous catheters are important in patients with cancer and other debilitating diseases. Peripheral venous catheterization is more difficult in these patients compared to others, and they are required for blood and platelet transfusion, total



FIGURE 1: Chest radiograph obtained after surgical placement of catheter shows satisfactory position in the superior vena cava.



FIGURE 2: Chest radiograph obtained 25 days after placement reveals migration of the catheter tip up into the right jugular vein.

parental nutrition, high dose chemotherapy, management of graft versus host disease, etc. Hickman's catheter is usually inserted under general anesthesia, and is secured with sutures.

Early complications are incorrect position, improper anchoring of the reservoir, skin infection, sepsis, vascular perforation with hemothorax or hemorrhagic pericardial effusion and pneumothorax.¹⁻³ Late complications include drug extravasation, mechanical malfunction, venous thrombosis, or migration of the catheter.¹⁻³ The overall rate of these complications is about 13%.^{6,7} Migration of a central venous catheter is a rare complication.⁸ The ideal position of the catheter tip is in the superior vena cava, at the right atrial junction, or in the inferior vena cava, at the

level of the diaphragm.⁹ Central venous catheter tip migration is more common with peripherally inserted catheters compared to the centrally placed ones (98% vs 2%).¹⁰ Migration of central catheter tip is not associated with side of insertion or gender of patient. There is no obvious explanation for the migration of the catheter tip in this case. The patient can be asymptomatic, therefore serial X-rays must be taken to ascertain the correct position of the catheter. In migrated catheter tips, radiological-interventional port catheter correction can be a minimally invasive alternative to port extraction and reimplantation.¹¹

Management of the migrated catheter includes obtaining a chest X-ray and removal of the catheter.⁶ A percutaneous retrieval technique is preferred because it is simple, inexpensive and has relatively low-risks. Dislodgment signifies displacement of the entire catheter including the fixed tunneled portion, and usually requires removal of the catheter since reinsertion may cause infection. A migrated catheter tip, however, may be repositioned safely. Lois et al., describing techniques for repositioning central venous catheters, used the term migration in a broad sense to include subintimal entrapment and partial dislodgment as well as true migration, which we would define as displacement of the tip of an undischarged catheter from a documented satisfactory position in the superior vena cava into a neighboring vein.⁴ Because of indiscriminate use of the term migration, the incidence of true migration is probably not known, but it seems to be a rare event.

The most common symptoms associated with catheter migration include chest wall swelling at the injection port chamber and pain in the shoulder.¹² Other suggestive features include withdrawal occlusion, resistance to injection of fluid, sudden onset of cough or chest pain, and

palpitations.^{12,13} In our case there were no symptoms.

Periodic monitoring of catheter position with chest radiography can enable detection of migration early, and allows for interventional repositioning before thrombosis develops. Clinicians must be vigilant in ensuring that the position of these catheters is correct. We periodically monitored the patient with chest radiography for migration, and we detected migration early.

Walker et al. reported malpositioned central venous catheters at the time of insertion and discussed the therapeutic implications.¹⁴ Mirro et al. reported three cases of catheter migrations, all requiring removal associated with 359 long term central venous access devices in children.⁵ In addition, Lois et al. described the interventional techniques they used in attempting to reposition central venous catheters whose tips had migrated into the internal jugular vein in two patients.⁴

CONCLUSION

Spontaneous cardiac migration of Hickman's catheter is a rare complication. The management should aim early detection. Monitoring with chest radiography aids in early detection. The migrated catheter should be retrieved as soon as possible by using guide-wire under scopy, if it is suitable. If it is not retrieved, it must be removed and a new one must be inserted.

Periodic monitoring of catheter position with chest radiography can enable detection of migration early, and allow for interventional repositioning before thrombosis develops. Radiologists must be vigilant in ensuring that the position of these catheters is correct.

Conflict of Interest

Authors declared no conflict of interest or financial support.

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