“Difficult to Flush Chemoport: An Important Clinical Sign”

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Abstract A central venous access device is an intravenous device whose internal tip lies in a large central vein. Chemoport is a central venous device which serves various purposes in oncology practice apart from optimum delivery of chemotherapy. Various early and late complications have been frequently reported with the use of these devices. Fracture-embolization of the port catheter is an uncommon but life-threatening complication. Timely recognition and management is important to minimize the morbidity and mortality.

Keywords Chemoport · Pinch-off sign · Fracture-embolization of catheter

Introduction

Totally implantable venous access devices are a great success in oncology. The device is implanted inside the body beneath the subcutaneous tissue, thus allowing patients unrestricted

physical activities and more socially acceptable to them. Furthermore, it requires minimum care from the patient. Chemoport is such a device. However, being an implantable and venous device, expert handling and care is required. We report two cases of chemoport fracture and embolization, which were timely recognized and managed.

Case 1 A-48-year old female underwent a modified radical mastectomy and chemoport insertion outside our institute in view of early breast cancer. She was referred to us for adjuvant chemotherapy. Chemotherapy was planned and she received 8 cycles of chemotherapy without any untoward event. During the last chemotherapy, after inserting needle in the chemoport, the resident doctor found difficulty flushing the chemoport. Patient also complaint of pain during attempted flushing. Flushing was held and a chest radiograph was advised, which revealed fracture of the chemoport and migration of the distal segment of the catheter (Fig. 1). A computed tomographic scan was done to find out the exact location of the fractured fragment and it was found to be lodged in azygous vein. Chemoport was removed and the fractured fragment was successfully retrieved with the help of interventional radiologist.

Case 2 A-42-year old female received adjuvant chemotherapy through chemoport for carcinoma colon and was on follow up. She was advised regular flushing of the chemoport. During her 1st visit for flushing, she noticed a sharp shooting pain during flushing. The oncology nurse was unable to flush the chemoport. An urgent chest radiograph was done which was suggestive of fracture and embolization of the distal segment of chemoport into the right ventricle (Fig. 2). She was immediately referred to the interventional radiologist and the fractured fragment was retrieved back.

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Fig. 1 Radiograph showing fractured segments of catheter

Discussion

Chemoport is a totally implantable venous access device which is required for delivering chemotherapy in modern oncology practice. It is usually required in those patients who undergo long sessions (infusional) or multiple cycles of chemotherapy. This drug delivery system has many advantages. It is easy to implant under local anesthesia. Chemotherapy can be easily administered into the large central vein thus avoiding frequent cannulation and vesicant action of drug and hence improved quality of life. [1]. It can also be used for delivering parenteral nutrition and other medications. Chemoport can be used for blood transfusion and frequent sampling as well. The access to chemoport is achieved via

skin using a non coring needle and this requires expert handling.

Chemoport may be associated with complications. These may arise during or just after insertion or later. Early complications although uncommon, include pneumothorax, arrhythmias, implanted site infection and bleeding. Late complications include bloodstream infections, venous thrombosis, patency impairment, air embolism and catheter fracture [2, 3]. Catheter fracture and embolization is an extremely uncommon complication with an estimated incidence of less than 1 % in the literature [1]. The usual site of catheter rupture is in the space between the first rib and the clavicle. This is the site where the catheter inside the subclavian vein gets compressed between the clavicle and the first rib. This was first described by Aitken and Minton as the “pinch-off sign” [4]. The most common clinical sign seen with this condition is difficulty in flushing the chemoport. Plausible explanation for the mechanism of difficulty in flushing is the mechanical obstruction of the catheter developed due to repeated compression as a result of catheter “pinch off syndrome”. The repeated compression leads to impairment of catheter patency, fracture and subsequent embolization. However, some patients may be entirely asymptomatic and some may present with chest discomfort, pain and swelling [5, 6]. It is of clinical interest that difficulty in flushing the chemoport and pain during flushing should be considered as a surgical emergency. Chemoport should not be used further in such cases and the patient should be immediately assessed for fracture of the catheter. The fractured fragment may lodge into the ventricle of the heart or elsewhere in the venous system and can cause complications [7, 8]. It should be removed at the earliest.

Learning Points

1. Difficulty in flushing the chemoport and pain are warning signs.
2. Though uncommon, port fracture is a recognized late complication of the chemoport.
3. Patient should be promptly investigated for chemoport fracture.

References

1. Di Carlo I, Cordio S, La Greca G, Privitera G, Russello D, Puleo S et al (2001) Totally implantable venous access devices implanted surgically. A retrospective study on early and late complications. *Arch Surg* 136:1050–1053
2. Ballarini C, Intra M, Pisani CA, Cordovana A, Pagani M, Farina G et al (1999) Complications of subcutaneous infusion port in the general oncology population. *Oncology* 56(2):97–102

Fig. 2 Radiograph showing fractured segment in right ventricle

3. Wolosker N, Yazbek G, Nishinari K, Malavolta LC, Munia MA, Langer M et al (2004) Totally implantable venous catheters for chemotherapy: experience in 500 patients. *Sao Paulo Med J* 122:147–151
4. Aitken DR, Minton JP (1984) The pinch-off sign : a warning of impending problems with permanent subclavian catheters. *Am J Surg* 148:633–636
5. Lin CH, Wu HS, Chan DC, Hsieh CB, Huang MH, Yu JC (2010) The mechanism of failure of totally implantable central venous access system: analysis of 73 cases with fracture of catheter. *EJSO* 36:100–103
6. Schulmeister L (2010) Management of non-infectious central venous access device complications. *Semin Oncol Nurs* 26: 132–141
7. Kapadia S, Parakh R, Grover T, Yadav A (2005) Catheter fracture and cardiac migration of a totally implantable venous device. *Ind J Cancer* 42:155–157
8. Nazareno J, Elliott JA, Finnie KJC (2005) Cardiac arrhythmia due to subclavian catheter fracture and embolization. *Can J Cardiol* 21:791–792