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Case Note

Removal of central venous catheter fragment embolus in a young male

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Abstract
A 22 years male admitted with severe pancreatitis with central venous catheter implanted for central venous pressure monitoring and for providing total parental nutrition developed catheter fragment embolus due to accidental fracture of the same while manipulating it. Non surgical retrieval of the same was done by radiological intervention without any complication.

Key words: intravascular catheter fragments, transfemoral venous approach, interventional procedures

The central venous access is increasingly used for the measurement of central venous pressure, to provide total parental nutrition and long term administration of intravenous medications. Impactions, fracture, embolism of these lines are described in the literature. We report a case of catheter fragment embolism due to accidental fracture during manipulation, retrieved successfully by radiological intervention.

Case report
A 22 year old male presented to the Emergency Room with severe abdominal pain for 72 hours and with personal history of heavy alcohol intake for past 4 yeas. On physical examination he had distended and tender abdomen. His serum amylase was 560 iu/l. The patient was diagnosed as acute pancreatitis and was conservatively managed with i.v. fluids, antibiotics and analgesics. Foley's catheter, central venous catheter and peripheral intravenous line were inserted. On the 7th day of admission he developed high grade fever not responding to antipyretics. So, the abdominal CT scan was done to rule out pancreatic necrosis and abscess. CT scan revealed pancreatitis with bilateral pleura effusion and right lower lobe consolidation. There was no evidence of pancreatic necrosis. Following this CVP catheter, peripheral line, Foley's catheter were changed. The new central line was inserted through the left subclavian vein. The next day the central venous catheter was kinked. While manipulating the same the catheter broke and the fragment embedded itself under the skin. Surgical exploration was immediately attempted under local anaesthesia but failed to extract the catheter. Then series of CXR showed the migration of the fractured fragment into the right atrium. Intravenous heparin was started and patient was closely monitored for possible cardiac arrhythmias till an arrangement was made for further intervention. Consultations were done with the interventional radiologist and cardiologist. With their active participation, the catheter fragment was snared and pulled out with a goose neck snare catheter under fluoroscopic guidance through right subclavian vein route. No major complication was observed during or after the procedure. The patient was discharged home after fever and pancreatitis subsided with conservative management.

Discussion
The need for central venous access, whether for definitive parenteral nutrition or prolonged antibiotic infusion, pain therapy, chemotherapy or for haemodialysis has made the placement and use of implantable systems a routine procedure for medical services. However such techniques are not free of many complications which include broken CVP catheter embolization[1]. Other complications are infection, central venous thrombosis and phlebitis[2]. Catheter fracture is related to tearing of the catheter during insertion or traction of the catheter hub junction, in one study occurring in up to 9.7%[3]. Catheter pinch-off due to friction between it and the clavicle /first rib is estimated to be 0.1%-1%[4].

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Removing foreign body from the vessels at the earliest is advised because of the life threatening sequels such as septicaemia, multiple pulmonary emboli and abscess formation, arrhythmia, perforation of the great vessels or the heart and sudden death[5]. This case did not have any previously mentioned complications prior to the intervention.

Thomas et al in 1964 first reported non surgical removal of an intravascular steel guide wire fragment[6]. Retrieval of impacted central venous line has been reported in various literatures. For a free floating catheter fragment a percutaneous retrieval technique is the method of choice. Among various retrieval instruments and devices loop snares are the devices most commonly used in retrieving foreign bodies, in part because they are inexpensive, simple and can be assembled easily [7]. The snaring technique combines a high degree of success with very little risk of damage. However if it is anchored at the of skin entry or outside the vessel, surgical cut down is preferred as a first approach6. We attempted surgical exploration immediately but with no result because of fragment migration. Thus we did percutaneous retrieval. Broken catheter is not a common problem and one arises if a catheter is reused or stored for a long time. But in our case the catheter broke during its manipulation which rarely occurs.

Conclusion

Extreme caution should be exercised while manipulating the central venous catheter. We recommend early heparinization to prevent thrombus formation around catheter fragment and i.v. antibiotics to prevent sepsis till arrangement is made for the intervention. The percutaneous retrieval should be done by the gooseneck snare technique for catheter fragment dislodged into the right atrium with the help of interventional radiologist and cardiologist.

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