Case Report

Lymph leakage following subclavian vein catheterization

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Introduction

Subclavian vein cannulation is a commonly performed procedure in clinical practice for a variety of indications. It is also popular as a temporary vascular access for haemodialysis. The reported complication rates range from 0.3 to 12% in various series [1]. Potential complications include failure to cannulate the vein, subclavian artery puncture, arteriovenous fistula formation, pneumothorax, haemothorax, pulmonary embolism, subclavian vein stenosis, venacaval or cardiac perforation and infection [1].

This report describes a rare complication of subclavian vein catheter insertion in a patient with end-stage renal failure.

Case

A 45-year-old male was admitted with diabetic nephropathy and advanced azotaemia. His presenting complaint was loss of appetite, vomitings and swelling of feet. On admission, he was alert and his blood pressure was controlled on 5 mg amlodipine and 3 mg prazosin per day. His daily urine output was 800 ml. Physical examination revealed moderate conjunctival pallor and bilateral pedal oedema. Respiratory, cardiovascular and abdomen examination was unremarkable. The salient investigations were Hb 8.0 g/dl, TLC 6600/µl with 67% polymorphs and 32% lymphocytes, BUN 95 mg/dl, creat. 9.5 mg/dl, total serum protein 6.8 g/dl and serum albumin 3.2 g/dl. The creatinine clearance was 5.5 ml/min. The examination of fundus revealed proliferative diabetic retinopathy. Chest X-ray showed mild cardiomegaly. Left ventricular hypertrophy with diastolic dysfunction was found on echocardiography.

There was no pericardial effusion. Abdominal ultrasoundography revealed bilateral normal size kidneys with increased echogenicity. The patient was started on maintenance haemodialysis. A double lumen haemodialysis catheter was inserted into the right subclavian vein using the infraclavicular approach. The procedure was smooth and successful at the first attempt. After the procedure a chest X-ray was within normal limits. It confirmed the catheter tip position in the superior vena cava. He underwent an uneventful dialysis on the same day using this catheter as vascular access.

Within the following 12 h, a serous ooze from the site of catheter entry was noted. The discharge soon became copious and required multiple changes of dressing each day (soaking approximately 10–12 pads per day). We could collect 3 ml of this fluid in 10–15 min. A prolonged compression and subsequent purse string suture around the catheter entry site failed to control the leak. The patient had no respiratory or cardiovascular symptoms. Serial chest X-rays revealed no new findings. The patient received one more dialysis from the same catheter. It was then decided to remove the catheter, apply prolonged pressure at the site and monitor the patient closely, both clinically and by doing serial chest X-rays. In less than 12 h after the catheter removal, the leak stopped without any problem.

The fluid we had collected was pale straw coloured. Despite having added heparin it formed a cobweb coagulum on standing. The protein content was 410 mg/dl. The microscopic examination revealed a preponderance of lymphocytes. The cell counts were: lymphocytes 840/µl, RBC count 230/µl and polymorphs 54/µl. On this basis it was thought to be a lymphatic leak. Lymphangiography could not be done to demonstrate the exact site of lymph leak.

Discussion

Subclavian vein cannulation could potentially injure many structures in the vicinity of subclavian vein. The junction of right subclavian vein and the right internal jugular vein is joined by three lymphatic trunks viz.
right jugular, right subclavian and right bronchomediastinal. In about one-fifth of individuals these trunks unite just before opening into the venous junction to form the right thoracic duct or else these open independently on the anterior aspect of the venous junction. The right subclavian trunk originates from the terminal axillary lymph node group and extends along the axillary and subclavian vein. The trunk and its opening are on the anterior aspect of venous wall [2]. Given these anatomical relations, an injury to a lymphatic trunk can be caused by subclavian vein cannulation. However, clinically evident injury is extremely rare. A ‘Medline’ search revealed only two reported cases of lymphatic leak on the right side after subclavian vein catheterization in the English language literature over the last 25 years. One case was associated with central line placement and the other case followed a pacemaker lead placement. In both these instances the catheter had to be removed and the leakage stopped uneventfully [3,4]. In our case, we can only speculate on the site of lymph leak. It is possible that the right subclavian lymphatic trunk was injured in a way that precluded a spontaneous closure of leakage. Injury to the thoracic duct is the classical example of lymphatic duct leakage. It is commonly seen in thoracic surgical practice and has been described in association with left subclavian vein cannulation leading to persistent leakage of chyle and collection in pericardial or pleural cavity [5]. The leakage stops on conservative management in 25–50% of cases and remaining 50–75% require surgical treatment [6]. Fortunately in both the cases of right lymphatic duct injury and our case, the leakage stopped uneventfully. It is likely that lymphatic flow in right side ducts is less and/or following catheter removal the local tamponade effect due to collection of blood and lymph may seal the defect. It is also possible that lymphatic injury does occur more often, but is not evident most of the time because of similar spontaneous cessation of leak.

Conclusion

This case describes a rare event of right subclavian catheterization getting complicated by a lymphatic leak. The removal of catheter stopped the leak uneventfully.

References


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