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Clues for diagnosing misplaced central venous catheter in the right ascending lumbar vein during right femoral venous access

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Abstract

The right ascending lumbar vein is difficult to detect on anteroposterior abdominal radiographs because it overlaps with the inferior vena cava on anteroposterior radiographs. Intensive observation by medical providers may be a cue for diagnosis. However, knowledge of catheter misplacement of the right ascending lumbar vein is also necessary, because misplacement cannot be suspected without that awareness.

INTRODUCTION

This editorial discusses the article "Lower extremity peripherally inserted central catheter placement ectopic to the ascending lumbar vein: A case report" (Manuscript No. 88630) [1]. The authors reported a case in which a central venous catheter was mistakenly placed in the right ascending lumbar vein without symptoms or complications [1]. Since the ascending lumbar vein is small, it can rupture and cause retroperitoneal hemorrhage if an irritant drug is administered through the misplaced catheter. Even without a rupture, catheter misplacement in the ascending lumbar vein may cause neurological symptoms because of its connection to the vertebral venous plexus [2]. Zhu *et al.* reported that complications caused by catheter misplacement in the ascending lumbar vein were observed in >70% of the cases [2]. Additionally, approximately 20% of the cases involved death due to complications [2].

It is well-documented that a central venous catheter is misplaced in the left ascending lumbar vein during left femoral venous catheterization [2-7]. In contrast, it is extremely rare for a central venous catheter inserted through the right femoral vein to be misplaced in the right ascending lumbar vein [2,8-10]. The left common iliac vein runs curvature significantly before joining the inferior vena cava (Figure 1). Therefore, it is anatomically understandable that a catheter inserted from the left femoral vein would proceed to the left ascending lumbar vein, which is more in the straight direction. Conversely, a catheter inserted from the right femoral vein might be considered to pass through the confluence of the right ascending lumbar vein and the right common iliac vein.

The ascending lumbar vein runs along the lateral aspect of the vertebral body. Therefore, the left ascending lumbar vein is separated from the inferior vena cava and is more likely to be detected on an anteroposterior abdominal X-ray image [2-7]. In contrast, the right ascending lumbar vein is difficult to detect on anteroposterior abdominal radiographs because it overlaps with the inferior vena cava on anteroposterior radiographs [2,8-10]. Zhu *et al.* recommend the use of lateral abdominal X-ray images before computed tomography scan examination for efficacy and economy [2]. However, in the absence of symptoms caused by catheter misplacement, there is no reason to suspect it, negating the need for additional lateral abdominal X-rays. Conversely, once symptoms appear, the patient's condition can rapidly deteriorate.

CONCLUSION

Intensive observation by medical providers is important in these cases. However, knowledge of catheter misplacement of the right ascending lumbar vein is also necessary, because without that awareness, misplacement cannot be suspected.

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