Ruptured Pseudoaneurysm of a Brachiocephalic Arterio-Venous Fistula for Hemodialysis Access – a Case Report

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Disclosure

Speaker name:

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I have the following potential conflicts of interest to report:

- ☐ Consulting
- ☐ Employment in industry
- ☐ Stockholder of a healthcare company
- ☐ Owner of a healthcare company
- ☐ Other(s)
- ☑ I do not have any potential conflict of interest

Introduction

"…An ideal access delivers a flow rate to the dialyzer adequate for the dialysis prescription, has a long use-life, and has a low rate of complications (eg, infection, stenosis, thrombosis, aneurysm, and limb ischemia). Of available accesses, the surgically created fistula comes closest to fulfilling these criteria…"

- NKF-KDOQI guidelines -

Although the risk for complication in AVF is less than other vascular access, it is not without complications

Pseudoaneurysm is a relatively rare, poorly defined complication of autogenous vascular access in patients on hemodialysis treatment. It is sometimes overlooked, yet could jeopardized patient's life for its thin vessel wall makes it prone to infection and rupture

Introduction

We report a case of a 39-year-old Asian man who presented with massive bleeding due to ruptured pseudoaneurysm of a brachiocephalic AVF which grew unnoticed just almost three months after the AVF was created– causing a life threatening emergency.

Case Illustration

A 39-year-old Asian Man with history of congestive heart failure (CHF), pleural effusion, atherosclerotic aorta, and end-stage renal disease (ESRD) on hemodialysis presented with massive bleeding from his AVF's rupture while undergoing hemodialysis through a tunneled cuffed venous catheter inserted in the right femoral vein

- 3 Months ago: started regular dialysis with CDL access
- 3 Months ago: left brachiocephalical AVF was created
- 18 Days ago: AVF was mature and accessible for dialysis

Case Illustration

Pictures of the patient's AVF 3 days before bleeding

3 Days ago

- a hemodialysis procedure via AVF was forced to stop after only two hours due to blood clotting, no enlargement was detected, he was prescribed an antiplatelet drug for his clot

D-day pre-dialysis

- dialysis nurses observed swelling and dilatation of his AVF without sign and history of bleeding from the cannulation site. The nurses described a bulging, shining and paper-thin skin area near the cannulation site. The nurses then consulted to Nephrologist and was asked to use the femoral catheter instead.

Case Illustration

D-day on dialysis

- 1 hour and 20 minutes into dialysis, a sudden massive bleeding occurred from his AVF. A pressure dressing was immediately applied to the bleeding site and the hemodialysis treatment was stopped. His BP was 100/60 mmHg, pulse 110 bpm, RR 28, temperature 36,5^{o}C. He was conscious, pale, and there was an area of dilatation of the AVF with a pinpoint are of bleeding which had largely stopped with pressure. Lab results: Hgb 5.7 gm/dL, Hct 21.8%, WBC 14.9 x10^{3}/uL, platelets 194 x10^{3}/uL, CT 10', BT 3', no PTT nor PT levels were evaluated.

Hemorrhagic Shock!

Case Illustration

Post Bleeding	• transfused with 2 units of packed red cells and prepared for surgery. An emergency explorative surgery observed a pseudoaneurysm and thrombosis of the AV fistula; the access was unsalvageable
2 Days later	• he went on uncomplicated dialysis through his femoral catheter
4 days later	• he was referred to advanced hospital for further examination and treatment

Discussion

Discussion

Discussion

Hospital Classification in Indonesia

BPJS Kesehatan
Badan Penyelenggara Jaminan Sosial

Discussion

PITFALL #1

There was no integrated record.

It is common for patients using BPJS to be treated in multiple hospitals and doctors. In this case, the first HD treatment was given in MH Hospital. But, the AVF was created in other hospital. He was also hospitalized in at least 3 different hospitals. Thus, it is difficult to gather a complete data of the disease.

Discussion

PITFALL #2

There was no sufficient imaging data.

In the investigation we could not find any imaging data regarding his HD access. An US examination was done during the implantation of CDL, but wasn't printed. Since the AVF was created in other hospital, we don't have any data regarding the surgery. There was no data whether any arteriography or angiography exam had been performed in this patient. If it had been performed, must be in type A hospital.

Discussion

PITFALL #3

Since the AVF was proclaimed matured, no examination by a vascular surgeon was done.

The maturation of the AVF was proclaimed by dialysis nurses via physical examination. Until the bleeding, he had never once see a vascular surgeon. BPJS restricts number of visits a patient could do to his subspecialist doctors. In a few cases, we encourage the patient to personally pay for their visits to the vascular surgeon.

Conclusion

Pseudoaneurysm is a rare complication of hemodialysis and mostly associated with inadvertent needle punctures. Early diagnostic is essential for avoiding further vascular complications and the risk of losing hemodialysis access. Nephrologists and dialysis nurses must be aware of the signs and symptoms of pseudoaneurysm. Early treatment should be done to prevent life-threatening bleeding from rupture and salvage the vascular access.

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