

Erroneous measurement of hematocrit from arterial cannula on failed fistula limb site in renal transplant recipient: A cautious path to tread!

Dear Editor,

Hemodialysis (HD) forms the mainstay of treatment for end-stage renal disease while awaiting renal transplantation. Arterio-venous fistula (AVF) is preferred for long-term HD since it has higher long-term primary patency rate, requires least interventions, and has lesser morbidity and mortality.^[1,2]

We present a case of a 35-year-old male patient for deceased donor renal transplant showing erroneous measurement of hematocrit after infusion of crystalloid in venous line in the arm harboring a failed AVF. Patient had a failed brachiocephalic AVF in the left arm and a patent radiocephalic AVF in the right arm. A 16G IV cannula was placed in the left cubital fossa. One hundred ml of plasmalyte® was administered during induction of anesthesia. As there was no bruit over the failed fistula on palpation or auscultation, left radial artery was cannulated and an arterial blood gas (ABG1) sample was obtained. Central venous catheter (CVC) was placed in the right internal jugular vein. Patient underwent HD a day before surgery. Post-HD hemoglobin (Hb) was 10 g/dl. However, ABG showed a hematocrit of 9% with Hb of 3.2 g/dl. A repeat sample illustrated the same findings. A venous blood gas (VBG1) sample from CVC showed a hematocrit of 27% with Hb of 9.1 g/dl, correlating with the preoperative Hb. A possibility of patent arterio-venous communication in the failed fistula was hypothesized. Fluid was discontinued from the 16G cannula and connected to CVC for any further infusion. The subsequent hour sample of ABG (ABG2) and VBG (VBG2) showed hematocrit of 27% and 26% with the hemoglobin values of 9.3 g/dl and 8.8 g/dl, respectively [Table 1].

Patients undergoing renal transplantation are known to have difficult vascular access. The arm with a functional AVF is precluded for use for vascular access. During the transplantation, due to unavailability of other sites, vascular access may need to be placed on the arm with failed fistula. There is no evidence to suggest that this cannot be done. Although unsuitable for use for HD,

Table 1: Comparison of ABG and VBG on starting and stopping the infusion

	Hematocrit (%)	Hb (g/dl)
ABG1	9	3.2
VBG1	27	9.1
ABG2	27	9.3
VBG2	26	8.8

these failed AVFs can persist as patent arterio-venous communications. In the present patient, an IV line was placed in the left cubital fossa after a failed brachiocephalic fistula which was probably patent, but not adequate enough to support HD. Sampling from the ipsilateral radial arterial line resulted in aspiration of IV fluid flowing through the cubital vein via the persistent AV communication, leading to hemodilution and erroneous reading. To the best of our knowledge, such case has not been reported previously in the literature.

Inaccurate sampling is not the only concern. Patent AVFs may cause serious morbidity when drugs such as thiopentone are injected. Furthermore, it can result in unnecessary blood transfusions which may cause allosensitization in recipient.^[3] Preoperative color-flow Doppler, ultrasonography, magnetic resonance angiography, and contrast fistulography can assess the blood flow in failed AVFs, but their routine use is not economically viable.^[4] Intraoperative ultrasound is a useful tool to detect patent AVFs, but was not available with us. Cannulation in the limb with failed AVF should be avoided, but if inevitable, the attendant problems and complications should be kept in consideration.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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Access this article online	
Quick Response Code:	Website: www.joacp.org
	DOI: 10.4103/joacp.JOACP_309_19

How to cite this article: Garg H, Gurajala I, Durga P. Erroneous measurement of hematocrit from arterial cannula on failed fistula limb site in renal transplant recipient: A cautious path to tread! *J Anaesthesiol Clin Pharmacol* 2022;38:162-3.

Submitted: 19-Sep-2019 **Revised:** 20-Dec-2019
Accepted: 24-Feb-2020 **Published:** 16-Dec-2021

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