

Permission to print: Yes
Category: IABP/Assist
Near Miss or Accident: Accident
Type of incident: Equipment
Knowledge Error: Yes
Rule Error: Yes
Skill Error: No
Violation: No

Description: IABP call out to CVICU at 5am. CVICU staff communicated the IABP was alarming and not working due to "catheter issues". Prior to reaching the hospital another call is received stating they have started to "manually" pump the balloon with a syringe. At this point I advised to get another IABP unit from the perfusion room and swap the unit over. By the time I arrived in CVICU the IABP was connected to a 30 or 50ml (unsure of size) syringe through the manually fill port with the error message "check balloon catheter" on the IABP unit. I asked to stop manually pumping. I observed the MAPs were approx. 45- 47 mmHg. The IABP unit, the balloon catheter and integrity of circuit were checked and appeared normal and ok. The circuit was re attached to the existing IABP unit and retested. The alarm "check balloon catheter" came up. The balloon was swapped to a new IABP unit, and again the alarm "check balloon catheter" came up. All options were eliminated except balloon damage. It suggested to change the balloon catheter and this was agreed. We tried to pull the IABP out and manually sucked the gas out of balloon for ease of removal. The balloon appeared to be stuck. It was established that it was being pulled through sheath. It was advised to insert a guide wire and remove balloon and sheath together. Duty intensivist was called at that time who advised to remove the IABP and leave it at that. The balloon was taken out, manually inflated with air and there was blood inside the balloon.

Contributing factors: Perceived balloon wear and tear.

Corrective action: IABP removed and appropriate managers informed of incident

Preventative action plan: The incident was reviewed with all staff involved.

1. The IABP in question demonstrated a series of "check balloon catheter" alarms. These resulted in cessation of IABP counterpulsation.
2. The balloon catheter lumen was checked for the presence of blood that would indicate a balloon leak (perforation) but this was negative.
3. An inability to solve the problem resulted in the n call perfusionist being called and he advised the IABP console be changed while he came in to the unit. This did not resolve the problem and the perfusionist was advised of this and told that manual inflation of the IAB catheter had been commenced by syringe.
4. Misunderstanding 1 - The assumption by the perfusionist on arrival was that IAB counterpulsation (pumping) was being attempted manually and he advised that this should cease. In fact low volume (30ml) periodic manual balloon inflation was being undertaken to reduce possible clot formation on a balloon catheter that had been static for an extended period of time due to the alarm status if the IABP. This is recommended in the user manual but would be extremely unusual.
5. After checking the system the perfusionist restarted the IABP with the same "check balloon catheter" alarm. In the absence of a system cause balloon rupture / damage was suspected and the advice was given to the registrar to Wednesday, 10 December 2014 Page 12 of 22 change the IAB catheter. On noticing the registrar was having difficulty withdrawing the balloon and advised this be done over a guidewire. Further attempts to withdraw the balloon resulted in it being "stuck" as removal was being attempted through the sheath.
6. Misunderstanding 2 – Balloon removal through the sheath in not possible.
7. The CVICU consultant was called and advised to remove the IAB catheter and sheath together and not to replace it.
8. Recommendations. Clarification [to be disseminated] on the indications for manual inflation of the IABP catheter for full inflation for suspected failure to unwrap immediately following insertion partial periodic inflation with a static balloon due to pump failure. Clarification all staff involved for the procedure for IAB catheter removal . Clarification to Perfusionists Nursing and Registrars to call the CVICU consultant before considering un planned IAB catheter replacement or removal or other insoluble problems. Any suspect Balloon catheter and sheath must be retained for subsequent inspection and possible return to the manufacturer

Manufacturer advised: Yes
Discussed with team: Yes
Ext Authority Advised: No
Hospital incident filed: Yes
Patient outcome variance: Nil

Ed Comment

The alarm status in question was unlikely to be an IABP fault when it was repeated on a second console. The absence of a "slow gas loss" or "rapid gas loss" alarm together with no sign of blood in the IAB catheter suggests the balloon was not leaking or perforated. The small hole (and fresh blood) seen in the balloon was most certainly the result of damage to the balloon on attempted withdrawal through the sheath. Repeated "Check balloon catheter" alarms are most frequently seen in obese patients (as was the patient in question) where the catheter, or more frequently the sheath becomes kinked caused an obstruction to gas flow in and out of the balloon. Repositioning of the catheter may overcome the problem however if the sheath is the issue (this can be out of sight) then repositioning of the sheath should be attempted together with repositioning of the patient's leg.