INCOMPATIBILITY OF INTRAVENOUS AMIODARONE WITH A SWAN-GANZ CATHETER

Valia Humbert-Delaloye1,2, Markoulina Berger1, Laurent Gattien3, Pierre Voirl1, André Pannatier1,2
1Pharmacy, Intensive Care Unit, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland
2Section of pharmaceutical sciences, Geneva and Lausanne University, Geneva, Switzerland

BACKGROUND

Patients in intensive care units (ICU) often receive many continuous infusions of drugs on a limited number of intravenous lines. In our ICU, one frequent combination of drugs administered together is:

Dobutamine-Norepinephrine-Amiodarone [DU-NE-AM]

During a 24-hours in vitro simulated Y-site administration of DU-NE-AM through a Swan-Ganz catheter (SGC) (figure 1), the measured concentration of AM at the extremity of the SGC was abnormally low, even 2 hours after start and returned to normal afterwards. This phenomenon was more obvious when the administration rate was low. The DU and NE concentrations were normal.

Based on literature data, we suspected an incompatibility of AM with the SGC, made of a mixture of PVC and plasticizer and internally coated with heparin. [1-2]

PURPOSE

To find the cause of this low AM concentration and compare the results when administered through a SGC with or without heparin.

MATERIAL AND METHODS

- Simulation of Y-site administration (figure 2) of:
  - Cordarone® (amiodarone) diluted (12.5 mg/ml) in Dextrose 5% and Gluco-Saline (3.3% Dextrose and 0.3% NaCl) at 1 ml/h
  - through:
    - an heparin-coated SGC (Edwards Lifesciences, model n° 831HF75)
    - an uncoated SGC (Edwards Lifesciences, model n° 831HF75)

- HPLC measurement (table 1) of AM concentration at the end of the SGC after:
  - 2 hours
  - 3 hours
  - 4 hours of simulation

(Am concentration was not measured after 1 hour because the result would not be reliable due to the starting bleeds of the syringe pump).

AM concentration was considered as "expected" if it reached 90-110% of the theoretical concentration (6.25 mg/ml).

RESULTS

- uncoated SGC
  - the measured AM concentration was as expected (figure 3)

- heparin-coated SGC
  - It took approximately 4 hours for AM administered through the heparin-coated SGC to reach expected concentration (figure 4)

  ⇒ the PVC seems to play no role
  ⇒ AM seems to interact with the heparin coating the inside of the catheter

CONCLUSION

Literature reports incompatibility between AM and PVC as well as heparin. Our results show that no significant interaction seems to occur with PVC whereas the heparin contained in SGC can interact with administered drugs, such as AM. A close attention must be paid to this risk.


contact : Valia.Humbert-Delaloye@chuv.ch