

MORE SUCCESS, LESS DANGER – THE ADEQUATE WAY OF PERFORMING DIALYSIS IN INTENSIVE CARE UNIT

Livia Ledo, Andrea Paar, Zsolt Onody M.D.

B. Braun Avitum Hungary cPlc., Dialysis Center 11.,

INTRODUCTION

Acute hemodialysis has to be assessed at the intensive care unit when the patient needs continuous intensive care therapy including assisted or total ventilation therapy or multi-organ failure therapy. Another reason is when the patient is not allowed to be transported due to major surgery (e.g. cardiac surgery), multi-organ or burn trauma.

BACKGROUND

Performing hemodialysis in Intensive Care Unit always increases the risk of potential nosocomial infections. We have to face this situation more and more often because dialysis (e.g.: sequential) became a preferred method next to necessary infusion therapy at the Intensive Care Unit (ICU). Sequential dialysis used in general supporting patient's adequate fluid balance therapy. The main indications could be acute renal injury, heart failure or toxication. It is indicated in acute renal injury as well that is usually caused by sepsis. Intensive care therapy constitutes the highest risk of nosocomial infection among all the other wards because of the potential well-known factors.

Objectives

Sepsis often occurs during intensive care therapy. The increasing number of this symptom can be explained by the following reasons:

- Increasing number of intensive care therapy methods
- Increasing age of patients
- Increasing number of invasive methods (diagnostic, therapeutic): more occasions of possible contamination of invasive devices
- Suppressed immune system
- Polytrauma, multi-organ failure
- Multiresistant bacteria, frequent use of antibiotics

(According to a study published recently, 750.000 cases of sepsis occurred during hospitalization in the USA.)



METHOD

Year by year, performing adequate and safe hemodialysis in Intensive Care Units presents a challenge. Our aim is to minimize the potential risk of nosocomial infections. It is one of our most significant aims to decrease the potential opportunities of infections. We analyzed the potential contaminations during the process of preparing a hemodialysis treatment.

Results:

We found two particular steps that include high risks as for the infection danger on the side of dialysis therapy:

1. Water machine disconnection
2. Moving dialysis machine between treatment rooms

We found that the dialysis staff should be responsible for the adequate treatment, especially the nurse and the technician, to make appropriate decisions in order to assure operation according to aseptic processing.

Conclusion:

We arranged the next principles in the applicable workflow:

- In case of more patients it is preferred to arrange each treatment in the same room to avoid disconnection of dialysis and RO equipment. (We use mobile RO machine at the ICU.) In order to reach this aim we consider it very significant that the communication between dialysis team and staff of ICU is efficient.
- If disconnection is not able to be avoided technician and dialysis nurse make the moving workflow including disinfection process: using Puristeril and closing at the connectors of dialysis solution.
- Dialysis nurse, technician and nephrologist are not necessary to be present but availability is a must.
- During initialization of equipment we apply rinsing of 10 minutes.
- Before starting preparation of dialysis we have to control that all residuals of the disinfection solution have been washed out.

CONCLUSION

It is required to build a closed system as much as possible. It is highly necessary to achieve perfect collaboration and communication with the staff of the Intensive Care Unit. Further examination is planned to gather more data, particularly as for the numbers of suspected nosocomial infections.