
¹REFERRAL CENTER FOR NEPHROLOGY, DIALYSIS AND TRANSPLANTATION
University Hospital Center Zagreb, Kispaticeva 12, Zagreb, Croatia

COMPLICATIONS DURING CONTINUOUS RENAL REPLACEMENT THERAPY IN CHILDREN WITH LIVER TRANSPLANTATION

Compiled by Senka Besedic¹,

with help from Ksenija Valentak¹, Jasna Slavicek¹,
Danko Milosevic¹ and Mirna Anicic¹

Background

- ❖ A liver transplantation was performed in a 12 months old girl with biliary atresia.
- ❖ Three days after transplantation a multiorgan failure was noticed including acute renal failure.
- ❖ Therefore, a continuous renal replacement therapy (CRRT) was performed.
- ❖ A second liver transplantation (retransplantation) was scheduled despite renal failure with CRRT in tractu during surgical procedure.

Chart 1. 2001 - 2018. years - 43 liver transplantations (3 retransplantations) in a total of 40 children

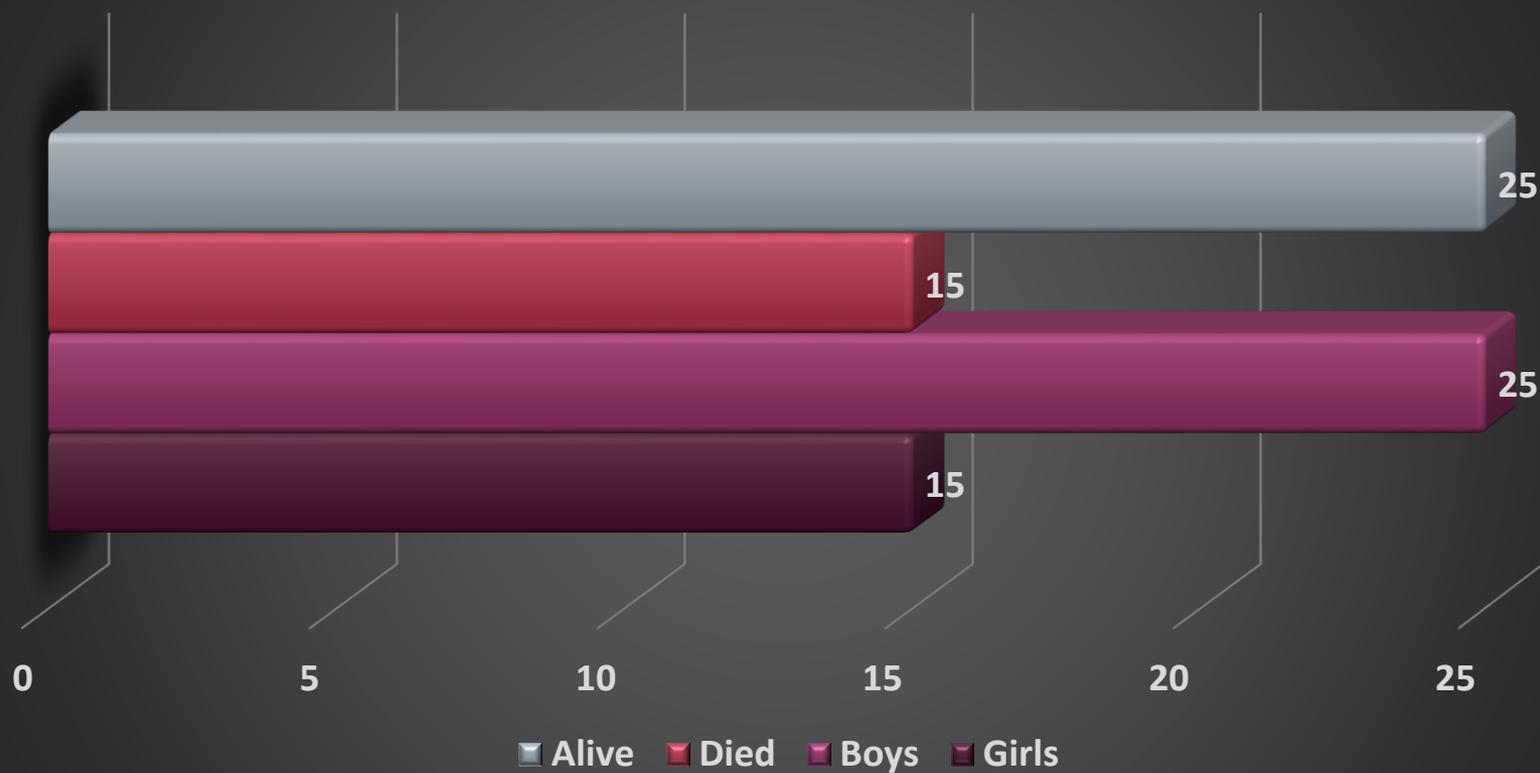
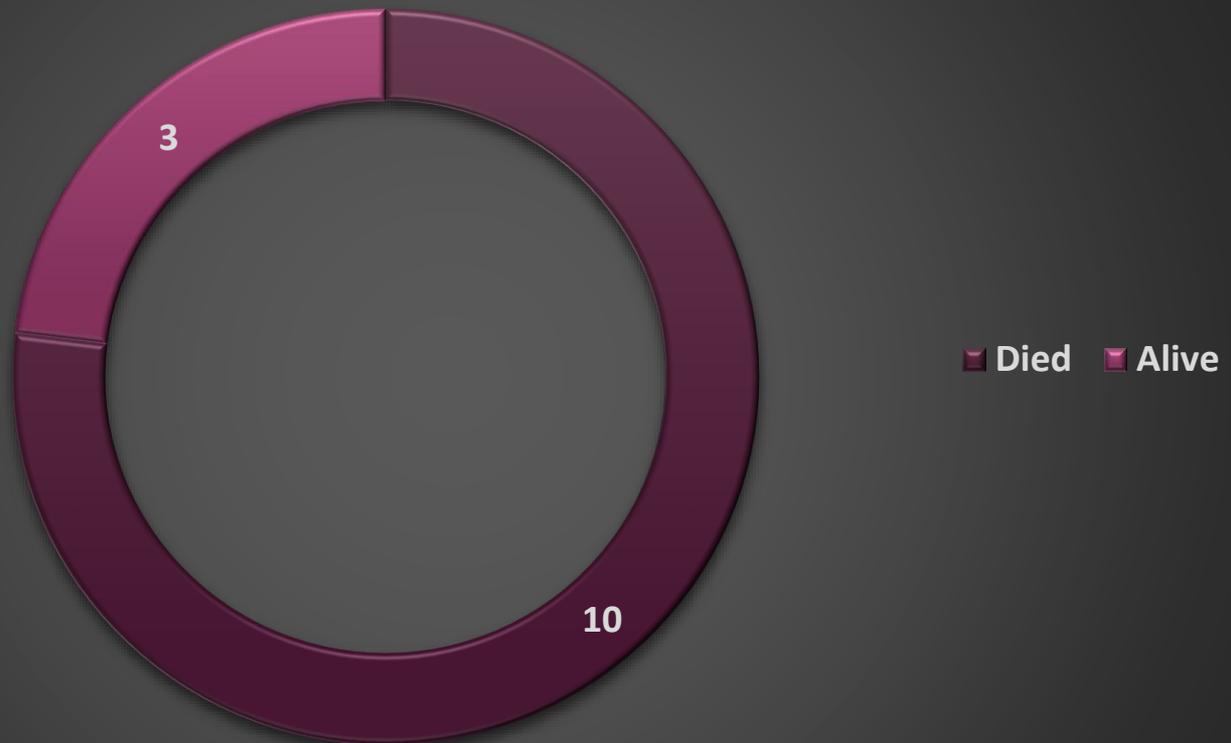


Chart 2. Patients with liver transplantation on CRRT



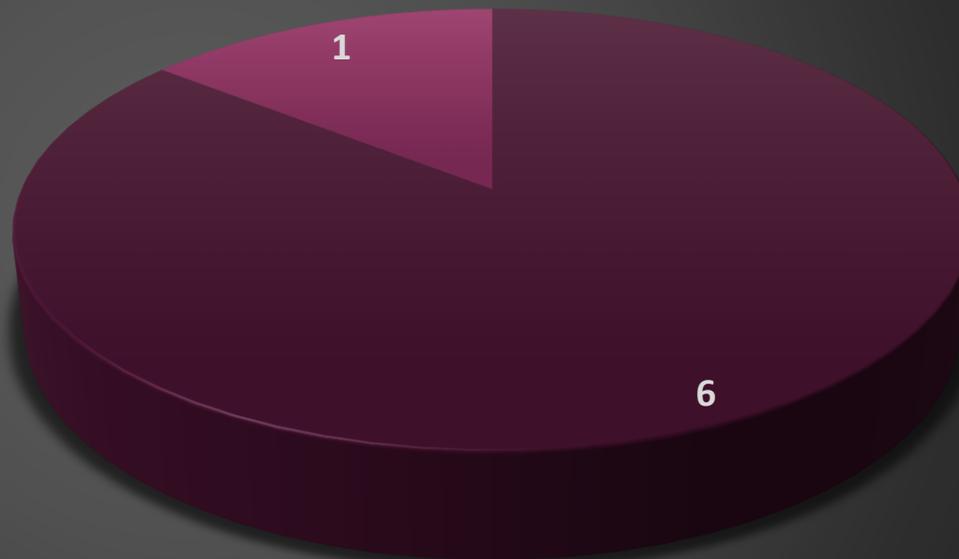


- ❖ A total of 13 children was dialysed during liver transplantation, 6 of them during surgery procedure.
- ❖ First hemodialysis during surgery procedure was performed in July 2013 yr during liver retransplantation.

Chart 3. CRRT during surgical procedure was first performed
2013 yr.

2013. - 2018. years
Total: 6 patients

- 6 children – liver transplantation
- 1 child – liver retransplantation



CRRT during surgical procedure

- ❖ CVK placement is necessary. The most common is hemodiafiltration in haemodynamic unstable patients.
- ❖ The proper method, dialysis set and the rest of procedure required skilled pediatric nephrologist in cooperation with anesthesiologist.
- ❖ The CRRT is performed in absence of anticoagulant therapy because possibility of bleeding during surgical procedure.

Potential complications during CRRT during surgical procedure

A proper placement of central venous catheter (CVK)

- A femoral position of CVK is not recommended as surgical procedure often leads to improper function of arterial (low pressure) or venous (high pressure) subsegmental catheter branch. The result may be inappropriate blood flow and/or clotting of hemodialyze set. Therefore, a iugular or subclavial CVK placement is far better option.

Dialyze set clotting

- Additional blood transfusions are often necessary among other hemodynamic complications.

A proper control of CVK and dialysis procedure

- It is important to communicate with other members of surgical team to maintain proper dialysis procedure (surgeon, anesthesiologist, other nurses). Failure to communicate in such cases increase the possibility of complications during CRRT.

Additional surse

- A specific task in such conditions requires at least two nurses (one inside the surgical room and one outside).

Additional training

- As such surgical procedure is very demanding for all personnel, additional skill and training for such conditions is required.

The other possible complication...

- Malfunction of dialysis device during surgical procedure, dialysis set perforation, bleeding, thromboembolia or air placement in dialysis set.

Conclusion

- ❖ CRRT is a complex procedure which requires skilled and educated nurse personnel.
- ❖ A multidisciplinary approach and coordinated cooperation between all medical staff is prerequisite for successful liver transplantation, minimizing potential complications.
- ❖ The most important and valuable is skilled and experienced nurses in such demanding conditions.

