# NEWBORNS WITH ACUTE RENAL INJURY IN PRACTICE OF ONE DIALYSIS CENTER

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## Background

- The incidence of acute kidney injury (AKI) in newborns according to different authors range from 1.54% to 64% depending on the disease and the hospital unit
- AKI as an independent nosological form is rare in newborns and most often develops on the background of sepsis or hypoxic lesion
- In the case of ineffective conservative therapy and progression of AKI, renal therapy (RRT) is needed
- Despite the development of modern medical technologies, mortality remains high and varies according to different data from 32 to 60%

## Aim

- To analyze the experience of one dialysis center of the treatment of infants with AKI

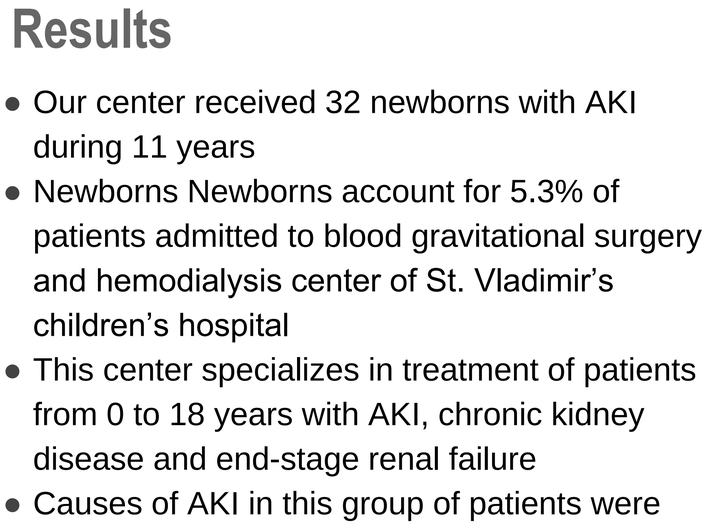
## Patients and Methods

- Retrospective analysis of 32 newborns with AKI have been admitting in the dialysis center from neonatal intensive care units from 2005 to 2015

## Results

- Our center received 32 newborns with AKI during 11 years
- Newborns Newborns account for 5.3% of patients admitted to blood gravitational surgery and hemodialysis center of St. Vladimir's children's hospital
- This center specializes in treatment of patients from 0 to 18 years with AKI, chronic kidney disease and end-stage renal failure
- Causes of AKI in this group of patients were sepsis in 18 infants (56.3%), hypoxia in 10 cases (31.3%), 4 cases of other reasons (12.4%)

**Fig. 1 Etiology of AKI in newborns from our study**




- Newborns were admitted to the dialysis center from intensive care units at 8,1 ± 5,6 days of life
- Cr - 434,5 ± 170 mkmol/l
- Ur - 29,6 ± 13,6 mkmol/l

**Table 1. Duration of oliguria/anuria before admission to dialysis center**

| Duration of jliguria/anuria | Number of children | % |
|---|---|---|
| 1 day | 2 | 7,1 |
| 2 days | 5 | 17,9 |
| 3 days | 6 | 21,4 |
| 4 days | 3 | 10,7 |
| 5 days and more | 11 | 39,3 |
| Without anuria | 2 | 7,1 |
| **All** | **29** | **100%** |

- 27 newborns (84,4%) were needed renal replacement therapy (RRT)
- 1st method in 20 (74,1%) children was continuous veno-venosus hemodialysis (CVVHD), in 6 (22,2%) – peritoneal dialysis (PD), in 1 case (3,7%) - continuous flow peritoneal dialysis

**Fig. 2 CVVHD in newborns**

- Complications of CVVHD: filter's thrombosis – 2 cases; bleeding from the catheter site– 1 case

**Fig. 3 Peritoneal dialysis in newborns**

- Complication of PD- 4 cases of leakage of dialysate in addition to the catheter and 1 case of the catheter block of the occurrence of dialysis peritonitis

- Changing of RRT method was conducted in 2 cases: in 1 patient because of catheter's block and development of dialysis peritonitis – PD was shifted to CVVHD. Another child continuous flow peritoneal dialysis was shifted to PD after stabilization of the state
- Mortality rate was 59.4% (n=14), 7 patients (36,8%) died on 1st day after admission to our hospital. This may indicate a late admission to the hospital.

## Conclusions

- Newborns account for 5.3% of all patients in a specialized dialysis center
- The main reasons of AKI in newborn are sepsis and hypoxia
- Modern technologies allow conducting RRT for children of any age, including newborns
- CVVHD is the most commonly used method of RRT
- Mortality in this age group remains high and is 59.4%, which is partly due to late admission of children to dialysis center

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