



Protocol For Postnatal Management of Antenatal Hydronephrosis Diagnosed Children

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ABSTRACT

The aim of management antenatal hydronephrosis (HAN) is to identify which are the cases who need early postnatal treatment because their renal function is endangered. **OBJECTIVE:** analyzing the postnatal development of children with HAN, to adjust international protocols of the our population. **MATERIAL AND METHODS:** We conducted a retrospective study on 140 cases with antenatal hydronephrosis hospitalized in our clinic between 2010 - 2014. **RESULTS:** The rapport was 2:1 for boys. 50% presented at least one episode of urinary infection. All children received ultrasound, 75% were evaluated by voiding cystography. Pieloureteric junction obstruction was diagnosed in 40% cases, vesico-ureteral reflux in 30% cases. Renal dynamic scintigraphy was performed at 25% patients. 25% required surgical intervention. Antibiotic prophylaxis was recommended to 50% patients. **CONCLUSION:** HAN postnatal evaluation should follow a clear protocol in order to early detection of clinically significant malformations and adoption of therapeutic attitudes before the onset of complications.

KEYWORDS

antenatal hydronephrosis, urinary tract infection, renal damage

BACKGROUND: Hydronephrosis is the most common urinary abnormality detected antenatally. Management strategy in children with urinary tract abnormalities has changed considerably, as a result of the development of equipment and techniques for the assessment of fetal details (5). Postnatal management goal is to identify early and treat patients whose renal function is endangered, while patients with low risk of renal damage will be followed conservatively (2). This management involves a spectrum of radiological interventions, medical and surgical diagnosis, monitoring and treatment.

OBJECTIVE: Analyzing the postnatal development of children with antenatal hydronephrosis, and to adjust international protocols to the characteristics of the our population.

MATERIAL AND METHODS: We conducted a retrospective study on 140 cases of children with antenatal hydronephrosis hospitalized in the Pediatrics - Nephrology Department of Emergency Clinical Hospital for Children St. Mary, Iasi, in the period 2010 - 2014. We analyzed age, first presentation, postnatal diagnosis, sequences applied investigations, use of antibiotic prophylaxis, the need for surgery. **Postnatal investigations were:** ultrasonography, voiding cystourethrogram, Tc DTPA dynamic scintigraphy with furosemide test, URO-IRM, intravenous urography, cystoscopy.

RESULTS: This current study was done in our clinic in patients who was carried out for: evaluation in 85% of cases, and for first urinary tract infection in 15% of cases. The study group consisted of 2/3 boys and 1/3 girls, average age at first presentation in the clinic - 2 months (see table 1). 38% of patients were diagnosed last year, 75% of who were from urban areas (higher pregnancy surveillance in the big cities).

Table 1. Distribution of children with hydronephrosis antenatal and postnatal diagnosed

| | Antenatal diagnosis group | Postnatal diagnosed group |
|---|---------------------------|---------------------------|
| Patients number | 38 | 102 |
| Boys:Girls | 2:0.4 | 2:1 |
| The mean follow | 29.03 months | 39.83 months |
| Hydronephrosis degree | I | 2 patients |
| | II | 4 patients |
| | III | 11 patients |
| | IV | 21 patients |
| Urinary tract infection at first presentation in clinic | 12 patients | 45 patients |

Student's t-test

- showed no statistical differences between the two subgroups of the postnatal initial ultrasound hydronephrosis grade ($p = 0.4$, CI 95%)
- the duration of follow-up ($p = 0.5$, 95% CI)

All children received ultrasound evaluation, 75% of them were evaluated by voiding cystography. In 80% of cases malformations was isolated, otherwise complex abnormalities.

- *Ureteropelvic junction (UPJ)* obstruction was the most frequent abnormality diagnosed in 40% of cases,
- Vesicoureteral reflux (VUR) in 30% of cases,
- *ureterovesical junction (UVJ)* obstruction in 15% of cases,
- multicystic renal dysplasia in 6% cases,
- renal agenesis isolated or associated with multicystic dys-

- plasia in 4% of cases,
- *Posterior urethral valve (PUV)* in 3% of the cases,
- ureterocele in 2% of cases.

Dynamic scintigraphy with ^{99m}Tc DTPA was practiced to 25% of patients. Indications was uropelvic junction obstruction, uretero-vesical junction obstruction, vesico-ureteral reflux (5,7).

In 55 patients (40%) was practiced intravenous urography, and in 6 cases was performed pyelography. 16% of patients required corrective surgery for lower urinary tract obstruction (10% cases) or *Ureteropelvic junction* obstruction (6% cases). 3 patients with Vth degrees VUR who had many infections with prophylactic therapy required surgery. Of the 42 patients with primary VUR only 25 could perform voiding cystography control, and we proved reflux remission in 10 cases. 57 patients (40.7%) experienced at least one episode of UTI. The incidence of infectious recurrences with resistant germ was higher in patients with complex malformations and combined treatments, medical and surgical. Antibiotic prophylaxis was recommended at half patients, and was taken correctly by 26% of them. Infectious recurrences at patients with antibiotic prophylaxis were registered under the 5% of patients.

DISCUSSIONS: There is controversy in defining, monitoring and therapeutic conduct in antenatal hydronephrosis diagnosed (1). It is difficult to determine which patients require surgical correction, in which time, and which the patients can be followed conservatively. **The major goal that must govern is the preservation of kidney function.** This sentence is supported by the works of many authors (3, 4). No hydronephrosis degree, or impaired renal function and / or response to the administration of furosemide at scintigraphy can not tell which of renal units will degrade (4). Dynamic scintig-

raphy with ^{99m}Tc DTPA is a very important investigation for children with ureteropelvic junction obstruction, ureterovesical junction obstruction, vesico-ureteral reflux. In our study proved this advantage. Investigations has also the limits who consist in requirement very good hydration of child (because of the anesthesia during examination), renal curves are difficult to obtain in children under 3 years (motion artifacts), immature renal function under 6 months can give false results. This is in consensus with Zanetta and Nguyen In their studies (5,7). Antibiotic prophylaxis deserves to be considered, especially in cases where the diagnosis was made after the first episode of urinary infection. A review of 4 databases made by Braga and co showed that antibioprohylaxis is important especially in cases with a high degree of hydronephrosis, especially if was an UTI in antecedents (1). The risk of urinary tract infection seems to be heigher in vesicoureteral reflux and megaureter, and no so frequent in uropelvic junction obstruction, like in paper of Russu and co. (6).

CONCLUSION:

- Antenatal ultrasound is one of the main modern methods of screening of renal and urinary malformations and appropriate use in our country as a method of screening all pregnant women.
- For postnatal diagnosis of antenatal hydronephrosis should follow a clear protocol in order to early detection of clinically significant malformations and adoption of therapeutic attitudes before the onset of complications, but also to avoid unnecessary investigations and treatments.
- It is necessary correct information to family, pre and postnatal and parental participation in decisions and investigations.
- A multidisciplinary team (nephrologist, pediatric urologist, radiologist, specialist in nuclear medicine, GP, psychologist) is very necessary to manage this patients

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