

The predictive value of the first postnatal ultrasound in children with antenatal hydronephrosis

Passerotti CC, Kalish LA, Chow J, Passerotti AM, Recabal P, Cendron M, Lee RS, Lopez AB, Retik AB, Nguyen HT

Department of Urology, Children's Hospital Boston, Harvard Medical School, Boston, MA 02115, USA

J Pediatr Urol. 2011; 7: 128-36

Objective: To evaluate the effectiveness of the first postnatal ultrasound (US) in predicting the final postnatal diagnosis using a database of children followed prospectively for antenatal hydronephrosis, and to compare these findings with a systematic review of the literature.

Methods: The study involved 1441 children who had their radiological evaluation between 3 and 60 days of life, including an US, performed at our institution in 1998-2006. Univariate and multivariate analyses were performed. A systematic review of articles on prenatal hydronephrosis resulted in 31 studies with 2202 patients who met the inclusion criteria for analysis.

Results: 62.0% of renal units (RUs) had transient or non-obstructive hydronephrosis. Increasing degree of hydronephrosis correlated with increased risk of urological pathologies (from 29.6% RUs in the mild group to 96.3% RUs in the severe group). A systematic review of the literature indicated very poor quality data, but the findings appeared to be concordant with those from our patient population.

Conclusion: The findings from this study will help to quantify the incidence of postnatal pathology based upon the first postnatal US parameters. This information is useful for counseling and for determining which postnatal radiological tests will be necessary.

Editorial Comment

In this study the authors used a prospective database of patients with antenatal hydronephrosis presenting to their institution. They looked specifically at the first postnatal ultrasound to see if it had any predictive value in determining the diagnosis or outcome. Over an 8-year period of time they obtained data on about 2800 children. There were 1441 children who met their inclusion criteria which included a full radiologic evaluation with VCUG and MAG-3 renal scan. While they found that the majority of their patients had “physiologic hydronephrosis”, there was a stronger correlation for true pathology being found in patients with higher degrees of hydronephrosis as one would expect. This is particularly true for patients with UPJ obstruction. They attempted to do a systematic review of the literature but found that there was limited data available.

While ultrasound remains a subjective imaging modality, it's important that we continue to try and tease as much information out of it as we can in order to avoid more invasive and costly imaging studies that expose infants and children to radiation. It's easy to work up the patients on the extremes: patients with mild hydronephrosis likely need no additional imaging and those with severe hydronephrosis need a VCUG and MAG-3 scan. I look forward to more studies like this that will help us all decide how to work up more of the patients who land in the middle.

Chad Wallis

Division of Pediatric Urology

University of Utah

Salt Lake City, Utah, USA

E-mail: chad.wallis@hsc.utah.edu