

ultrasound during late pregnancy. Kidney length in infants with acute infection correlated with inflammatory parameters, and the clinical importance of this finding needs to be studied further.

### Editorial Comment

This is a population-based, prospective study looking at all patients younger than one year of age who presented with a urinary tract infection to a single institution over 3 years. They were able to get complete data on 290 patients, all of whom underwent DMSA scan and ultrasonography acutely and then a VCUG within two months of diagnosis. Structural abnormalities were detected in 40 patients. Ultrasound was able to detect abnormalities in all but 10 of these patients. These 10 patients had “dilating” vesicoureteral reflux. 12 of the 40 patients went on to require surgery, but only 6 of those procedures were for reflux. Other important abnormalities detected included UPJ obstruction, UVJ obstruction and ureterocele.

As we continue to evaluate the pros and cons of a top down versus bottom up approach to reflux, this study highlights the continued value of ultrasonography for pediatric patients. Some have questioned the usefulness of ultrasonography for evaluation of children with a urinary tract infection. The fact that ultrasonography is readily available, non-invasive, and does not require radiation exposure will likely ensure that this imaging modality will not be left to the wayside regardless of which approach one chooses.

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### Management of abnormal postvoid residual urine in children with dysfunctional voiding

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**Objectives:** To evaluate the effect of biofeedback therapy on the residual urine volume in children with dysfunctional voiding.

**Methods:** This prospective study was conducted in children with dysfunctional voiding associated with abnormal postvoid residual urine (PVR) from June 2002 to 2007. The children were divided randomly into 2 groups. Group 1 was treated with standard urotherapy combined with biofeedback therapy and group 2 was treated with only standard urotherapy. The outcomes of uroflow-electromyography pattern, urinary tract infection (UTI), and PVR were recorded before and at the end of sixth month of treatment.

**Results:** A total of 94 patients were enrolled in this study. Groups 1 and 2 consisted of 62 and 32 patients, respectively. The voiding pattern became normal in 80.6% (50/62) and 56.2% (18/32) of patients in groups 1 and 2, respectively. The PVR resolved in 40 of 62 (64.5%) patients in group 1 and in 11 of 32 (34.4%) children in group 2. Before the treatment, UTI was noted in 22.5% of patients (14/62) in group 1 and 21.8% of patients (7/32) in group 2. After the treatment, UTI was observed in 3.2% of patients (2/62) and in 9.3% (3/32) of patients in groups 1 and 2, respectively. Although both treatment modalities changed the voiding pattern, rate of febrile UTI, and PVR positively, these outcomes were better in a combination group.

**Conclusions:** The combination of standard urotherapy with the biofeedback therapy improved the results significantly.

**Editorial Comment**

This is a prospective study looking at the efficacy of standard behavioral therapy compared to behavioral therapy plus biofeedback training. The authors enrolled 94 patients in the study, all of whom had a staccato voiding pattern on uroflow consistent with dysfunctional voiding. The authors not only looked at postvoid residuals but also examined the prevalence of urinary tract infection and flow rate at the beginning of the study and after six months of treatment. There were no significant differences in the demographics of the patient populations. Improvement was noted in both groups of patients at the end of the study; however, the biofeedback group had significantly better outcomes in terms of the prevalence of infections, elimination of postvoid residual and improvement in flow rate.

While there is no question that we can improve outcomes in children with standard behavioral therapy alone, this study adds to the growing data demonstrating the improved efficacy of combining this with biofeedback therapy. It would be nice to have some follow-up data to examine the durability of treatment in these patients beyond six months.

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