INTRODUCTION

Mild isolated antenatal hydronephrosis (MIAHN) represents half of the urinary tract abnormalities detected by antenatal ultrasound (US) and the most frequent fetal abnormality. There is a growing evidence that MIAHN is a benign condition but even nowadays there are authors who propose extensive protocols in newborns (NB) with this diagnosis. Postnatal approaches may include serial US, antibiotic prophylaxis (AP) since delivery, voiding cystourethrography (VCUG) and isotope renogram (99mTc mercaptoacetyltriglycine with furosemide) in anterior-posterior pelvic diameters (APPD) greater than 10 mm. No consensus exists on how to measure the hydronephrosis (HN) and on the definition of the superior value of mild HN leading to different postnatal approaches. The definition of an accurate limit that differentiates mild from moderate HN may avoid unnecessary investigations having a high impact in terms of cost-effectiveness.

Since 1989 we consider MIAHN when APPD is of 5 to 15 mm, without calyceal dilatation and with normal cortical thickening in the prenatal (3rd trimester) and postnatal US (3rd to 7th day of life) (Fig.1). AP and VCUG were indicated in all NB according to the bibliographic recommendations at that time. Worried about the possibility of over-investigation, we reviewed this approach (Fig.2) and according to the results obtained since 1998 neither VCUG nor AP have been indicated systematically in NB with unilateral and bilateral MIAHN. VCUG has been performed only in those who developed urinary tract infection (UTI), VUR was performed only in those who developed urinary tract infection (UTI), DMSA scan was performed, 4 patients (3 with APPD < 10 mm) showed slight abnormalities at DMSA, none of them had VUR.

One hundred forty five hydronephrotic renal units showed intraterrer resolution. After 6 months of follow-up, the outcome of the HN was similar in the group with APPD 5-10 mm and 11-15 mm (Table2). Four children showed progression of HN (2 of them with a previous APPD of 5-10 mm). Two of these 4 patients had slight functional impairment and accumulative curves in the RRG and required surgery, 1 had an APPD 11-15 mm.

Considering all the patients, the costs of the AP since delivery would have been $120,000 per year and of systematic VCUG $161,000; the isotope renogram in the 40 patients with APPD of 11-15 mm would have been $30,000 (Total: $311,000). We indicated 24 VCUG in children who had UTI ($14,400) and 4 isotope renograms in the 4 children in whom the HN worsened ($3,000). Our approach resulted in a saving of a $293,600 ($311,000 – $17,400) in the postnatal imaging evaluation of these groups of patients. No less important were the 209 patients with APPD of 5-10 mm and those with APPD of 11-15 mm was not statistically significant. Ten percent of the patients had UTI, 3 of them had VUR of low grade and 1 a vesical diverticulum, in 4 child slight abnormalities in DMSA scan were found. Progression of the HN was observed only in the 1, 5% of the renal units and 2 patients (0.7%) required surgery. Our conservative management resulted in a saving of a $293,600 in the postnatal imaging evaluation. Therefore an APPD of 15 mm was a safe limit to define MIAHN and allowed us to reduce invasiveness, radiation dose and costs to health services and families.

"The challenges of the health system for the following years are to achieve excellence and to reduce its costs through a radical transformation in the way of thinking and doing." Jaime Varo

RESULTS

Twenty-four patients (10%) had UTI. The difference in the incidence of UTI was not statistically significant in NB with APPD of 5-10 mm and those with APPD of 11-15 mm (Table1). In these patients except for one, a cyclic VCUG was performed. Three patients (1 female) showed grade I-II reflux and 1 boy a small vesical diverticulum, these 4 had an APPD of 5-10 mm. In 20 out of the 24 with UTI, DMSA scan was performed, 4 patients (3 with APPD < 10 mm) showed slight abnormalities at DMSA, none of them had VUR.

MATERIAL AND METHODS

From 570 NB with prenatal renal abnormalities, 269 (47%) had MIAHN. In order to assess the security of a superior limit of 15 mm to define mild HN and the cost-effectiveness of our current algorithm for MIAHN in terms of outcome of patients, costs of imaging studies in the postnatal evaluation and radiation exposure.

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CONCLUSION

The difference in the incidence of UTI and in the outcome of the HN between the patients with APPD of 5-10 mm and those with APPD of 11-15 mm was not statistically significant. Ten percent of the patients had UTI, 3 of them had VUR of low grade and 1 a vesical diverticulum, in 4 child slight abnormalities in DMSA scan were found. Progression of the HN was observed only in the 1, 5% of the renal units and 2 patients (0.7%) required surgery. Our conservative management resulted in a saving of a $293,600 in the postnatal imaging evaluation. Therefore an APPD of 15 mm was a safe limit to define MIAHN and allowed us to reduce invasiveness, radiation dose and costs to health services and families.

BIBLIOGRAPHY

[3] There is a wide range of variability in doses depending on the times of fluoroscopy, equipments, radiographs obtained, if the VCUG is normal or not, experience of the practitioner.