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Does the multicystic dysplastic kidney really involute? The role of the retroperitoneoscopic approach

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Abstract *Objective:* To assess the role of video-assisted retroperitoneoscopy in the follow up of multicystic dysplastic kidney (MCDK) that has involuted — disappeared? — on serial renal ultrasonography (US).
Patients and methods: Prospectively, we performed a retroperitoneoscopy in 14 patients, nine girls and five boys, with unilateral MCDK that had involuted on serial US. MCDK was diagnosed in utero (80%) and confirmed postnatally by US and Tc99m dimercaptosuccinic acid radionuclide scan. Follow up US examinations were performed at 1 month, 5 months and 12 months in the first year of life and every 6 months from then on. US showed complete involution at a mean age of 13 months (range 5—18 months). Retroperitoneoscopy was then indicated, at a mean age of 23 months (range 8—24 months), to confirm the disappearance of the kidney dysplastic remnant.
Results: Retroperitoneoscopy detected persistence of anomalous kidney tissue in 100% of cases. The mean length of the renal remnant was 2 cm (range 1—3.5 cm).

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Two cases showed a pelvic ectopic location that was not detected by US before involution. The remnant was removed during the same procedure. Anatomo-pathological findings were found to be compatible with dysplastic renal tissue. There were no intra- or postoperative complications. All patients had a mean length of stay of less than 24 h.

Conclusions: Complete resolution on US does not mean disappearance of MCDK, as US does not detect renal dysplastic remnants after cyst involution has occurred. The retroperitoneoscopic approach to the renal and pelvic area is a minimally invasive, safe and effective procedure to diagnose and treat the renal dysplastic remnant in US-involuted MCDK.

Introduction

The frequency of diagnosis of multicystic dysplastic kidney (MCDK) has increased in the past 20 years because of the widespread use of antenatal and postnatal ultrasonography (US) [1—6]. Many of these patients have neither symptoms nor a palpable abdominal mass [7—9]. Conservative management has been regarded as the therapeutic method of choice [10—14], based on serial US follow up during the first years of life. Advances in US have greatly increased accuracy in identifying MCDK, and detecting the changes in size of the dysplastic kidney and the reduction of MCDK disease, based on renal cysts. The absence of cysts, which correlates with the disappearance of MCDK, is considered to indicate complete resolution of the disease [6,10—13,15]. Nowadays, video-assisted retroperitoneoscopy is the favoured diagnostic and therapeutic approach in the renal fossa [16—23]. The objective of this study was to assess the efficacy of retroperitoneoscopy to diagnose the involuted MCDK according to US, in order to verify the correlation between US complete resolution and total disappearance of the dysplastic renal tissue.

Patients and methods

Between 1998 and 2004, 14 patients (nine girls and five boys) with unilateral MCDK that showed complete involution on US, underwent prospectively a retroperitoneoscopic approach. MCDK was detected prenatally in 80% of the cases and confirmed postnatally by US and Tc99m DMSA isotope scan. Postnatal follow up US examinations were performed at 1 month, 5 months and 12 months of age, and every 6 months thereafter. US showed complete cyst involution at the mean age of 13 months (range 5—18 months). In one patient, US showed the absence of cysts at 13 months, but in a pre-surgical study performed at the age of 24 months US detected the existence of a 1-cm-long cyst in the renal area. None of the patients developed hypertension or symptomatic UTI during follow up.

All patients underwent a retroperitoneoscopic approach after US involution of the MCDK. The mean age at time of this procedure was 23 months (range 8—24 months). The approach was performed according to the previously described technique [19], using a 30° optic and 9—10 mm Hg retropneumoperitoneum. Insertion of a first 10-mm port at the level of the costolumbar angle, pointing towards the posterior region, was used to locate the dysplastic renal remnant. In ectopic MCDK cases, two additional ports were required to find the pelvic dysplastic renal tissue.

Results

The retroperitoneoscopic approach revealed persistence of dysplastic renal tissue in 100% of the patients. In 86% (12 patients), the renal remnant was located in the renal fossa (Fig. 1A) and in two cases in a pelvic ectopic location. With regard to the latter, the US examinations before cyst involution did not diagnose MCDK in this ectopic location.

In all cases we confirmed the existence of an atrophic renal hilus with arterial and venous vessels (Fig. 1B), complete or partially permeable and rudimentary, with diverse distribution and frequent trifurcations; and either a hypoplastic ureter with partially permeable lumen or ureteral atresia. In all patients the renal remnant was removed during the procedure (retroperitoneoscopic nephrectomy), through the insertion of two other ports in a triangular layout. The mean size of the renal remnant was 2 cm (range 1—3.5 cm) maximum longitudinal diameter (Fig. 1C). The mean