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Laparoscopic management of congenital mesoblastic nephroma- case report

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ABSTRACT

Congenital mesoblastic nephroma (CMN) also called leimyomatous harmartoma is a mesenchymal renal tumor. CMN is the most common solid tumor in newborns and young infants which is basically benign. Pathologically there are three variants of CMN - classic (conventional), cellular (which is more aggressive) and mixed. In a complete surgical removal of the tumor (nephrectomy), the literature results are excellent.

Introduction

In 1967, Bolande et al., first time differentiate CMN from nephroblastoma (Wilms tumor).[1] CMN is the most common solid tumor in newborns and young infants, corresponding to approximately 3% of all kidney neoplasms in children, which is basically benign. In 14% of the cases, additional different malformations can be found (gastrointestinal, polyhydramnios, genitourinary). In most of the cases can be found other symptoms like hypercalcemia, hematuria, arterial hypertension, anemia, polyuria and palpable abdominal mass. Pathologically there are three variants of CMN - classic (conventional) with very good overall prognosis, cellular which is more aggressive able of metastases and recurrence, and mixed variant.[2]

Case report

We present 11 months old child in who after delivery was detected tumor formation (1,65 × 1,41cm) at the upper pole of the left kidney. In the beginning from the ultrasound examination, initial diagnosis of hematoma was given, and the patient was left for observation. At the 3-month on control examination, it was found that the formation had increased in size(4 × 3,8cm), and it was intended to make MRI with a subsequent biopsy(Fig. 1), the biopsy, result was - CMN - a classic type, with invasion of the renal sinus fat, which was the reason to do radical nephrectomy not to performed partial resection(Fig. 2).

The operation was done via transperitoneal laparoscopic approach using three 5 mm skin port(Fig. 3), and a 3 cm inguinal incision from where the kidney was removed using endobag. We performed left radical laparoscopic nephrectomy. The operation time was 60 minutes, with minimal blood loss, the post-operative period was smooth. On the third day patient was discharged from the hospital. Histopathology result confirmed the diagnosis - CMN– classic variant. Six months after the operation the patient is doing well, he is cancer free.

Discussion

Numerous different causes can result a renal mass in children like infection, infarction, trauma, lymphatic malformation and also neoplasms, At this age group it is important to stress the predominance of mesoblastic nephroma and the importance of understanding its characteristics to make a differential diagnosis, to make a correct early diagnosis and decide about management and avoid complications. Vido L. et al. reported that tumor cells can produce extreme production of prostaglandin E and cause hypercalcemia, causing polyuria in the fetus. Probably this is the cause of polyhydramnios which can induce the prematurity and preterm labor.[3] Other study from Malone PS et al. reported that hyperreninism is the main mechanism for hypertension because of extreme production of renin by retained renal elements in some cases.[4] The boys are more commonly affected unlike girls among patients with CMN with ratio 2:1. CMN is usually detected prenatally by ultrasonography, often show a well outlined unilateral, homogeneous and hypoechogenic mass. For the determination of the tumor origin and morphology Magnetic resonance imaging (MRI) is appropriate tool, also useful for identification.

Pathologically there are three variants of CMN - the classical variant is present in 24% of cases while the cellular variant is seen in 66% of cases and mixed. Most of the local recurrence and distant metastases are reported in cellular CMN, with predominant site the lung. The most

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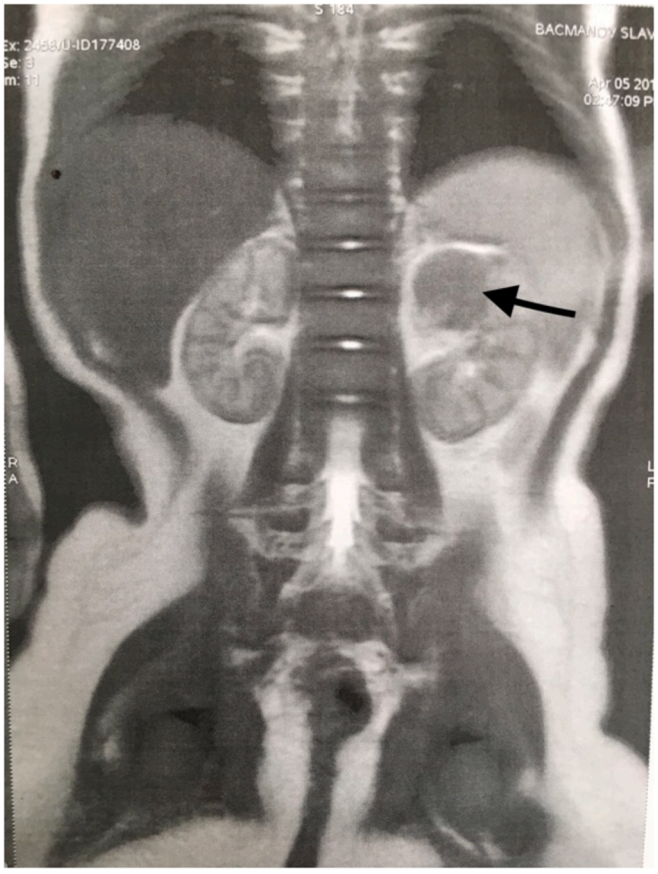

Fig. 1. MRI – Coronal view, arrow show tumor mass on the upper pole of the left kidney.

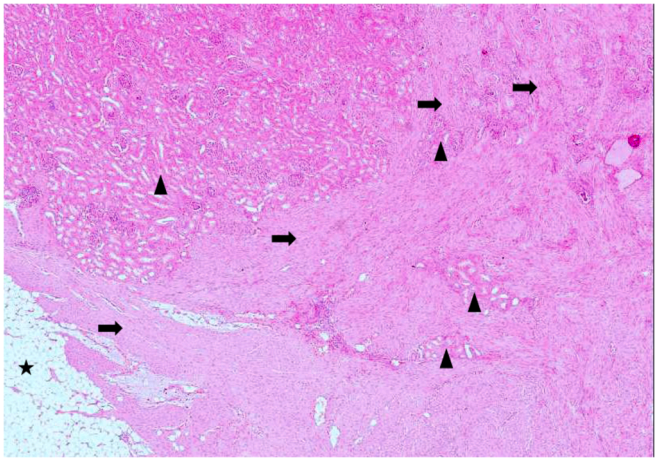

Fig. 2. Interdigitating tumor (arrows) – kidney (arrowheads) junction and invasion of renal sinus fat (asterisk) (x100).

significant factors associated with local recurrence and metastasis are stage III or greater tumor and involvement of intrarenal or sinus vessels of the kidney.

Usually and mandatory the treatment is surgery of this type of tumor and is the first-line therapy in all patients with CMN. The

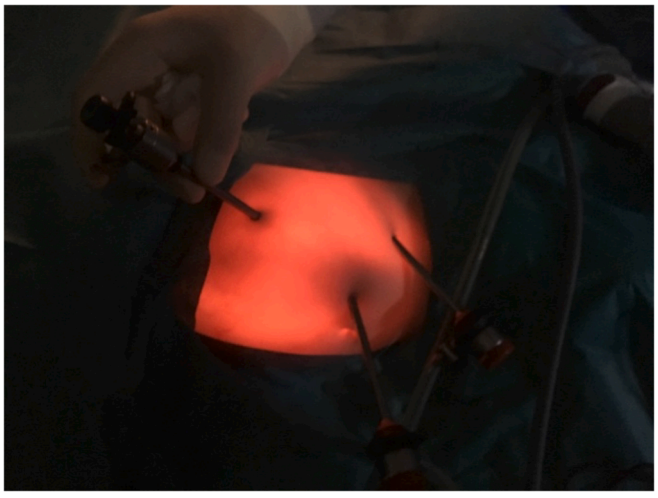

Fig. 3. We used 3 × 5 mm ports on the abdomen, after creating of pneumoperitoneum.

treatment advocated immediate tumor resection by radical nephrectomy. From the oncological point of view to achieve complete resection and to insure radical treatment it is mandatory to remove the kidney, including the whole adipose capsule. For that reason, partial nephrectomy is not appropriate. Nonetheless, an insufficient surgical margin requires a new intervention in order to remove the residual disease. The most significant factors associated with local recurrence and metastasis includes tumor involvement of intrarenal or sinus vessels. There is a place also for adjuvant chemotherapy and should be offered primarily only to those patients who have Stage III cellular MN and an age of 3 months or older at the time of diagnosis, in cases of residual microscopic disease or in cases of tumor rupture. Most cases have favorable outcomes, overall prognosis of CMN is very good[5]

Conclusion

Usually, the treatment of this type of tumor is surgical and is the first-line therapy in all patients with CMN. The treatment advocated immediate tumor resection by radical nephrectomy.

Laparoscopic Nephrectomy is a safe, effective treatment modality for management of kidney tumors in infants.

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