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Case Report

Laparoscopic nephrectomy in a pregnant woman with ruptured renal angiomyolipoma – case report

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Abstract. Renal angiomyolipoma is a rare condition, with a benign follow up commonly, but with a possible fulminant progression when complicated with rupture. The higher prevalence in females and during pregnancy can indicate an influence of hormonal balance on the development of these tumors. We present the case of a 24-year old, 15-week pregnant woman who was admitted in the emergency room for iterative acute right flank pain, without hematuria or hemodynamic instability. Blood tests revealed no special modifications except for a mild anemia (hemoglobin=11,3g/dl). The abdominal ultrasonography and MRI described a right renal mass of 60/50 mm with acute intratumoral bleeding suggestive for angiomyolipoma. A laparoscopic radical nephrectomy by retroperitoneal approach was performed without incidents or complications for either mother or fetus. The pathological exam confirmed a renal angiomyolipoma. The laparoscopic nephrectomy with retroperiotneal approach can be performed safely in women having acute complications of kidney tumoral masses during pregnancy.

Key Words: Renal angiomyolipoma, pregnancy, laparoscopic surgical procedures, nephrectomy

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Introduction

Renal angiomyolipoma is a rare condition, with the more so as it is diagnosed in pregnancy. In a study published in 2014, in which 61,389 patients who underwent abdominal ultrasound were included, the overall prevalence of sporadic angiomyolipoma was 0,44%, (0.6% in female subgroup and 0.28% in male group) (Fittschen 2014). There are some other studies that evaluated the presence of angiomyolipoma using computed tomography, reporting a prevalence of 2.2% for renal angiomyolipoma, but this study was conducted on potential kidney donors (Rule et al 2012). To our knowledge, twenty-one cases of renal angiomyolipoma in pregnant women have been published in literature until now.

The rupture of angiomyolipoma with spontaneous severe bleeding in pregnancy may jeopardize both mother and fetus. The ethics of reproductive medicine, method of diagnosis, option for management and optimal time for surgical intervention can be arguable in the situation of ruptured angiomyolipoma in pregnancy (Koh et al 2007). We present the case of a 15-week pregnant woman with symptomatic renal angiomyolipoma, diagnosed and treated by laparoscopic retroperitoneal radical nephrectomy.

Case report

A 24-year old, 15-week pregnant woman presented for acute right flank pain, without hematuria or hemodynamic instability. Blood tests revealed increased white blood cells (14000/mmc), mild anemia (hemoglobin=11.3g/dl), no modifications of renal function (creatinin=0.85 mg/dl, urea=30 mg/dl), normal liver tests (AST=23 U/l, ALT=30 U/l), normal blood sugar (98 mg/dl). An abdominal ultrasonography and MRI were performed, which identified the presence of a right renal mass of 60/50 mm and suggested an acute intratumoral bleeding (Figure 1). A laparoscopic radical nephrectomy by retroperitoneal approach was performed. The CO2 pressure during the intervention was maintained between 10 and 12 mmHg. The intervention was performed without incidents or postoperative complications for either mother or fetus. The patient underwent C-section at 39 weeks and both the baby and the mother are healthy.

In this case, the pathological diagnosis was renal angiomyolipoma with high Ki-67 expression (immunohistochemical staining was positive in approximately 15% of nuclei (Li W et al 2015). Before preparing the manuscript for publishing the data related to this case, the patient signed a written informed consent.

Discussion

Renal angiomyolipoma is a rare condition, with a benign follow up commonly, but with a possible fulminant progression when complicated. The complications appeared in pregnant females might become life threatening, in this case, rapid and accurate diagnosis and treatment being mandatory.

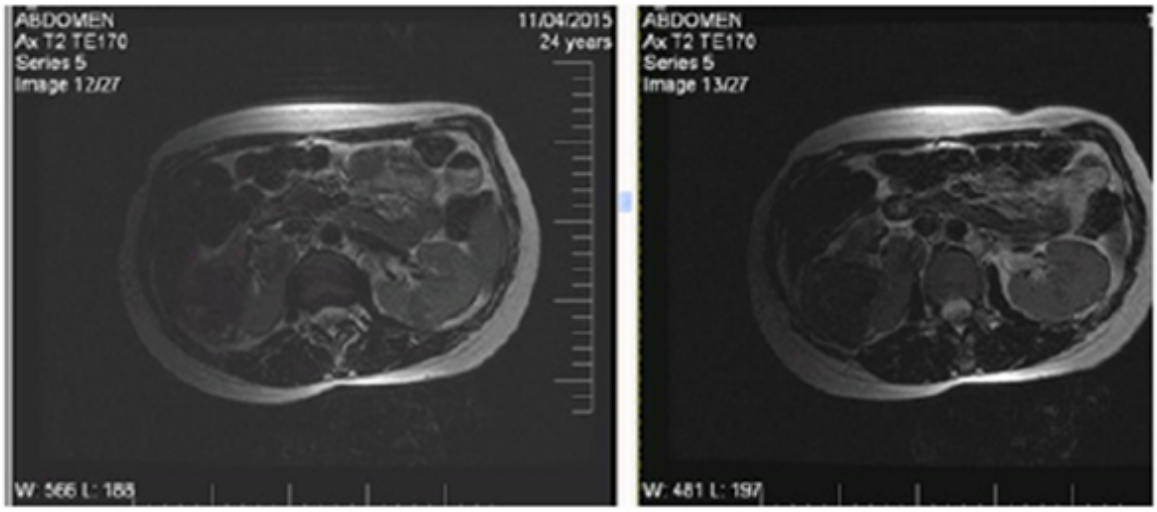

Figure 1. MRI image of right renal angiomyolipoma

The higher prevalence observed in females in different clinical observations suggest that female hormones might promote the growth of renal angiomyolipoma, concerning their frequency, size, and hemorrhagic complications (Wunderlich syndrome) during pregnancy (Raft et al 2006; Zapardiel et al 2011). This potential course is more probable in pregnant women due to stimulation of estrogenic and progesteronic receptors which are over-expressed in the angiomyolipoma and the intra-abdominal hyperpressure induced by the pregnant uterus. Not only pregnancy is a promotor for the development of angiomyolipoma, but also the hormone therapy, as it was observed in a study conducted on females following oral contraceptive therapy (Gould et al 2006).

The majority of angiomyolipoma are asymptomatic (Steiner et al 1993), but when developing complications, these benign tumors may become clinically relevant, presenting acute lumbar pain, hypotension, even shock. In the presence of symptoms, an imaging technique (abdominal computed tomography or MRI) should be used for the positive diagnosis (Raft et al 2005). The therapeutic management in these cases includes monitoring, arterial embolisation or nephrectomy. Interventions are recommended in symptomatic patients (Preece et al 2015) although arterial embolisation induces irradiation and should be avoided before 10 weeks of gestation (dos Santos et al 2014).

Using laparoscopy in pregnancy is controversial. It is generally considered that one pregnant patient in 500 requires an abdominal non-obstetrical intervention, and in these cases laparoscopy is a reasonable alternative (Guidelines Committee of SAGES 2008). On the other hand, only 7 cases of radical laparoscopic nephrectomy have been published to date (6 standard laparoscopic interventions and one robotic intervention) in pregnant patients using the transperitoneal (4 cases) or retroperitoneal approach (3 cases). The advantages of laparoscopy are less uterine manipulation - decreasing the risk of abortion, the lower requirement for analgesics – therefore a lower risk for respiratory depression, no wound complications and early mobilization - which decreases the thromboembolic risk. The disadvantages derive from the effects of the pneumoperitoneum on the uterus and placenta, with decreased blood flow, from the effects of CO2 (acidosis) and the risk of directly injuring the uterus. In this context, the retroperitoneal approach can be more opportune (Arvind et al 2011; Corneille et al 2010).

Zapardiel et al performed in 2011 a Medline search of the literature for articles on renal angiomyolipoma and pregnancy and its complications and identified 16 articles (all case reports), but selected only 13 because of unavailable data in the 3 other articles (Zapardiel et al 2011). In 2015, Preece et al cited 21 reports of hemorrhaging angiomyolipoma in pregnancy published in the last 35 years. The mean gestational age was 29.6 weeks. Eight patients were treated conservatively to term, one underwent exploratory laparotomy with evacuation of haematoma only, five were embolized, and seven were managed by nephrectomy (five with concurrent caesarean section). There were two associated fetal deaths (Preece et al 2015).

Conclusion

We report on a rare case of renal angiomyolipoma diagnosed incidentally in a pregnant patient. Due to the suspected intratumoral hemorrhage, we performed tumoral excision by laparoscopic retroperitoneal radical nephrectomy. To our knowledge, this approach for renal tumors in pregnant patients is still in its early stages.

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