BLEEDING RENAL ANGIOMYOLIPOMAS. CT FINDINGS

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[Angiomiolipomi renali sanguinati. Rilievi con TC]

ABSTRACT

Purpose: To describe our experience in three cases of abdominal haemorrhage caused by bleeding renal angiomyolipomas, which were studied with Computed Tomography (CT).

Materials and methods. A retrospective study carried out at our archives identified 3 patients (aged 58.6 on average) with renal angiomyolipomas clinically manifested with acute abdominal haemorrhage. The patients underwent an emergency CT scan of the abdomen. One patient also underwent a subsequent renal angiography. All patients had surgery and histological characterizations of the renal lesions.

Results: The CT study on all three patients allowed detection of a lesion in the kidneys with inhomogeneous density due to haemorrhage. Area with fat-density values (-60 - 80 UH) were always observable within the lesions. The lesion, measuring 5-9 cm, were located in the right kidney in two patients and in the left kidney in one.

Conclusions: In 40% of patients, renal angiomyolipoma may account for a picture of hypovolemic shock, so a correct diagnostic approach is important to guide the surgical approach. CT allows detection of the angiomyolipoma as the cause of the haemorrhage in most cases. The diagnosis is relatively simple when the lesion has typical features such as adipose content, whereas it may be difficult with non-typical aspects. Furthermore, the fat content may also be detected in varying quantities in other renal lesions responsible for bleeding.

Key words: Renal angiomyolipoma, haemorrhage, computed tomography.

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Introduction

Renal angiomyolipoma (AML) is a relatively rare benign tumor (0.3-3% of all renal neoplasms) composed of fat, muscle tissue and vascular elements in various proportions (1-3). The small-sized lesions are usually asymptomatic and are often an incidental diagnostic finding. Larger lesions may be clinically because, in 40% of cases, they tend to rupture with subsequent bleeding (1-3). AML is one of the most frequent causes of subcapsular and perinephric haemorrhage in adults (4-12).

In around 40% of patients, the AML starts clinically as haemorrhagic complication and in 20% of them with a hypovolemic shock (4-12). Therefore a correct diagnostic approach is important in order to guide the surgical approach.

Emergency ultrasound is often the first diagnostic test to be carried out and enables to assume the presence of a neoplasm with a reported sensitivity of 13-30% while identifying both the haemorrhage and the tumor, as compared to a reported sensitivity of 71% for the CT scan (1-4).

In cases of bleeding, at ultrasound AML appear as inhomogeneous, mainly iso- or hypoechoic perinephric masses inside whicha few hyper-echoic areas may also be seen. The CT aspect of these lesion is that of a perinephric mass with inhomogeneous density, mainly hyperdense due to haemorrhage, with hypodense areas which are more or less outlined based on the fat content of the lesion (4-7).

In cases of profuse bleeding, at TC the hypodense areas may be masked by the hyperdensity of
the haemorrhage, but it is not very likely although possible on occasions, that the fat content is obscured by the blood to the point of not being recognized\(^2\text{-}^4\). In this case thin scans (1-3 mm) of the lesion are crucial for detecting even minimum quantities of fat tissue. We describe three cases of bleeding renal AML studied by CT and managed as a surgical emergency caused by retroperitoneal bleeding.

Materials and methods

A retrospective study carried out on our archives identified three patients (2 women and 1 men, aged 52-70 years, mean age 58.6). They were referred by the Emergency Unit to undergo abdominal CT for acute abdomen of presumed vascular origin. Clinically, 2 out of 3 patients complained of a piercing pain right flank, 1 in the left flank. In 2 out of 3 patients a palpable mass was found in the abdomen. Severe anaemia affected 3 patients, macrohematuria 1 patient. CT scans were performed with 3 rd e 4 th generation CT scanners with unenhanced and contrast enhanced acquisitions. Two of the 3 patients underwent total nephrectomy, 1 partial nephrectomy.

In all 3 cases the diagnosis of bleeding renal AML, basing on CT scans and in 1 case on renal angiography was confirmed by histology.

Results

The CT scan detected a exophytic renal mass with inhomogeneous density, mainly hyperdense due to haemorrhage, with hypodense areas (-60 -80 UH values) caused by the presence of fat tissue in all 3 patients(fig. 1A, B). Two masses were in the right kidney and 1 in the left. Their maximum diameters were between 5 and 9 cm in size.

The kidney exhibited impressions and was displaced at the front (fig. 1A, B) in 1/3 patients or medially in 2/3(fig. 2 A, B, 3). The renal fascia(anterior and posterior), the lateroconal fascia, the renorenal and renal-fascial septa were thickened in the three cases.

The anterior and posterior pararenal spaces were also involved. The fat component was clearly outlined in two cases (fig. 1A, 2) and was identifiable, being predominant compared to the muscular and vascular components. In the third case (fig.3) the fat component was scarcely outlined at the CT scan.

Fig. 1-A-B: Bleeding left renal Angiomyolipoma A) Plain CT. In the left perinephric space an inhomogeneously dense mass, mostly hyperdense with a small central hypodense(with fat density) area is observable. The mass originates from the kidney, which is anterolaterally displaced with the renal vessels and a thinned anterior renal fascia. B) CT with i.v. contrast medium. The lesion enhances slightly following i.v. contrast.

Fig. 2 A-B: Bleeding right renal Angiomyolipoma. A) Plain CT. An “iceberg-like” lesion with a clear fat density component and an abundant hyperdense haemorrhage in the perinephric space, displacing anteromedially the right kidney from which it originates, is detected. The renal fascia and the reno-renal septa are thickened. B) Right renal arteriography. Hypervascular lesion with tortuous vessels and pseudoaneurysms.
Bleeding renal angiomyoliposam. CT finding

Fig. 3: Bleeding right renal Angiomyolipoma. CT after i.v. contrast medium. An inhomogeneously dense mass engaging and displacing the right kidney anteromedially is detected. A thickening of the perinephric space is also associated.

Conclusions

The treatment of bleeding AMLs includes two main therapeutic options: embolization or (partial/total) nephrectomy. Embolization is feasible when a benign disease (AML) is definitely diagnosed. Total or partial nephrectomy is restricted to those lesions that cannot be definitely diagnosed by imaging techniques and for which an impromptu histologic test is necessary.

Conservative treatment is recommended for patients with only one kidney. Diagnostic imaging techniques allow, in almost all cases, identification of renal angiomyolipomas as the causes of haemorrhages. Thin layer CTs are extremely useful because they can identify even the smallest components of fat tissue within the lesion. CT can detect the site and size of the lesion, and any concurrent lymphadenopathy (which can sometimes be found in patients with tuberous sclerosis) and to assess the involvement of structures besides the kidneys, thus providing guidance for the most suitable treatment.

The examination is also easy and fast, provided that the patient is haemodinamically stable, and allows to guide the surgical approach.

References


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