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Case report

Retroperitoneal hematoma by different causes: Presentation of two emergency cases at computed tomography [☆]

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ABSTRACT

Retroperitoneal hematoma is a rare clinical entity with variable aetiology, which is increasing in incidence mainly due to complications related to interventional procedures. The causes of RE are different. We present 2 suggestive cases of RE, one for renal cause and another of adrenal origin. Both came to our attention as a matter of urgency. Retroperitoneal hematoma, therefore, originated from different causes, with consequent different treatments. Both cases were diagnosed, as a matter of urgency, thanks to the use of contrast Computed Tomography, which allowed a rapid diagnosis, careful specialist evaluation, a monitoring of their clinical conditions, and a consequent adequate outcome for the patients.

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Case presentation

Case 1

A 63-year-old man arrived at the emergency room for severe abdominal pain in his right side, hematuria and anemia. About fifteen days ago, he underwent surgery (in another hospital) on partial superior polar right nephrectomy, with the removal of a renal carcinoma. A contrastographic Computed Tomography (CT) study was immediately carried out as a matter of urgency, with Uro-TAC study protocol, that showed

(Figs. 1A-E) the surgical outcomes of the well-known surgery on the upper pole of the right kidney, and, already in the basale CT phase, the presence of a hyperdense hematoma with blood density (size 6.5 × 5.5 cm) that occupied the middle-upper third of the right kidney and extended towards the right renal pelvis. After intravenous administration of the contrast medium, opacity of the right renal artery was documented, which forked early in extrarenal in 2 branches; in the endorenal, in continuity with the upper arterial branch, a hyperdense image was appreciated, compatible with the spreading of the contrast medium within the hematoma. The right peri-renal adipose tissue and peri-pararenal bands

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Fig. 1 – (A-B) basal CT phase just showed the presence of the hyperdense hematoma (6,5 cm) with blood density in the middle-upper third of the right kidney and extended towards the right renal pelvis; inside the bladder there was highlighted the presence of a voluminous blood clot (C) cortical CT phase; (D) nephrographic CT phase, and (E) escretory CT phase. The right retroperitoneal hematoma was clearly visible at all stages of the UroTC study.

were obliterated and with signs of imbibition. In the late phase of the study, opacity of the right renal lower calyx group was found, while the remaining upper-middle caliceal structures were not recognizable. Inside the bladder there was highlighted the presence of a voluminous (size 6 cm) blood clot.

The patient was immediately hospitalized, and shortly, due to the persistence of his serious clinical conditions since his arriving at the hospital, he underwent selective catheterization of the right renal artery, which highlighted pseudo-aneurysm of a higher polar branch, likely

the cause of bleeding, and immediately continued with the embolization of vascular afference by means of a 3D spiral. This interventional procedure was successfully concluded (Figure 2).

The subsequent CT control exam showed the absence of active spreads of contrast in peritoneal cavity, as well as the complete exclusion of the pseudo-aneurysm.

The patient's clinical-laboratory and blood parameters slowly regularized and, after about a month of hospitalization, he had returned at home. Now the patient will perform a clinical-radiological and laboratory follow-up.

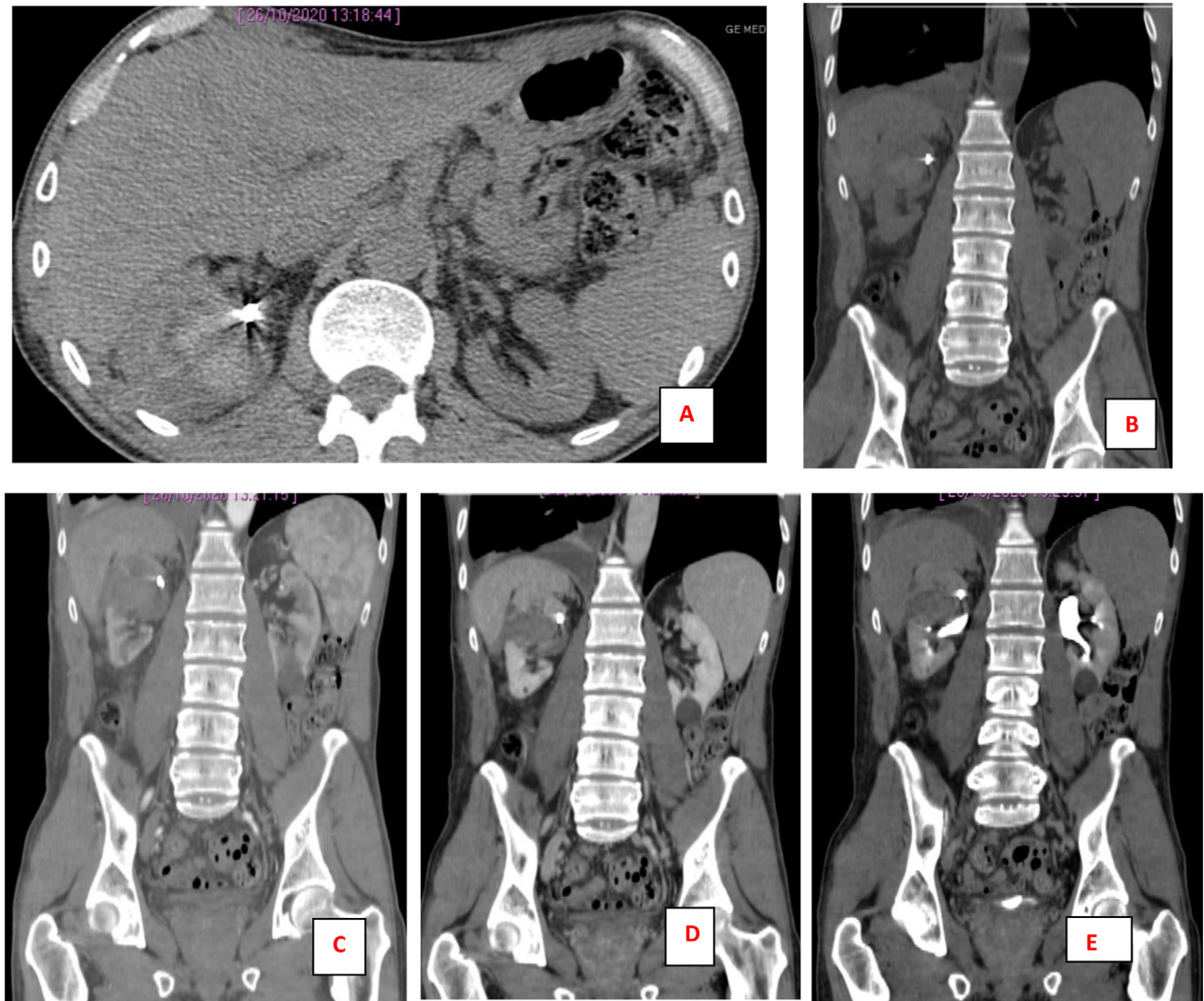


Fig. 2 – (A-B) basal CT phase just showed the presence of the spiral with the complete exclusion of the pseudo-aneurysm. (C) cortical CT phase; (D) nephrographic CT phase, and (E) late 8 minutes CT phase, that showed any active contrast spreading in the peritoneal cavity.

Case 2

A 82-year-old man arrived at the emergency room for severe abdominal pain in his left side, vomiting, agitation, significant reduction of the hemoglobin blood values (8 gr/dl), syncope and anemia. About ten years ago he had a vascular surgery with vascular endoprosthesis placement for the treatment of a voluminous aneurysm of the subrenal abdominal aorta. Five years ago he reported surgery for removal of a melanoma in the left inguinal region. Now, a contrast-enhancement CT study was urgently made, that showed (Figs. 3A-D) the presence in the left hypochondrium of a voluminous bilobate nodular expanded, with a heterogeneous structure (size 8 cm) that already in the basal phase had several confluent hyperdense components, such as recent blood bleeding. In

the context of this expanded, in the portal phase of the study, some hyperdense images with a serpiginous course are identifiable, tending to increase density in the late phase, as per active spreading of the contrast medium in the context. In the adjoining case was also identified an extensive fluid tissue, with blood components in the context, which extended in the retroperitoneum to the left iliac region, with evident imbibition of the adjacent fascial planes, and obliteration of adipose tissue, resulting in compression of the left kidney and left renal vein.

The patient stabilized in the haemato-chemical parameters, and surgery of adrenalectomy. The surgical report was that of adrenal metastases bleeding from melanoma (Figs. 4A-D). One week after the surgery, an abdominal CT scan with contrast medium, the left retroperitoneal hematoma was in

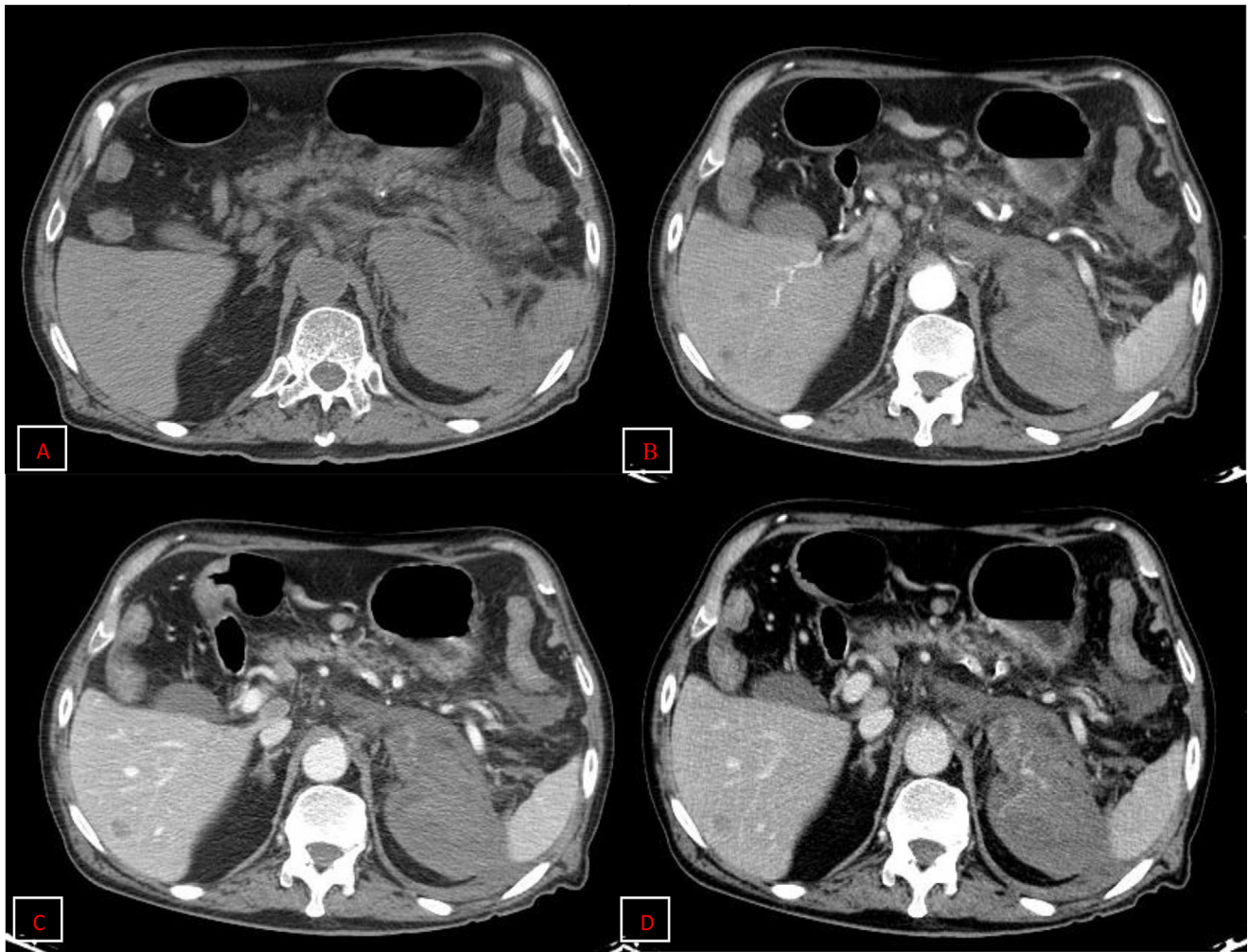


Fig. 3 – Axial CT documents in the left adrenal loggia collected at partly blood density in the basal phase (A), with signs of active spreading of MdC not clearly recognizable in the arterial phase (B), better evident in the portal phases (C) and above all the late (D) of the contrastographic study, with progressive increase in density and extension.

the reabsorbing phase (Figs. 5A-B), so that the patient, once back home, planning the next instrumental and therapeutic procedure with the oncologist.

Discussion

Case 1 showed the presence of an active right renal bleeding, due to a pseudo-aneurysm, in the context of a post-surgical hematoma (previous removal of right upper renal pole tumor). It is, therefore, an iatrogenic bleeding, resulting in a reduction in the values of hemoglobin. Renal hematoma is a frequent complication of kidney surgeries. The hematoma is visible at CT as an expansive, hyperdense formation just in basal conditions (density > 50 HU), in the surgical site, which may extend even in the surrounding spaces [1,2]. A renal pseudo-aneurysm is the result of an injury of an intrarenal artery at the surgical site, or the main renal artery or one of its branches, and is visible as a mass, round morphology,

in continuity with the renal arterial vessels with respect to which it presents the same density after administration of the contrast [3,4].

Case 2 showed the presence of a left retroperitoneal hematoma, from adrenal cause, in oncologic patient, immediately subjected to urgent surgical treatment. Unilateral adrenal hemorrhage is an uncommon surgical emergency that can present as massive retroperitoneal hemorrhage and is potentially fatal [5]. Its causes include: severe physical stress, infection, bleeding disorders, use of anticoagulants, procedures, and tumor bleeding [6,7]. In this case the cause was the adrenal metastases bleeding from melanoma. Although acute adrenal hemorrhage within an adrenal mass is most commonly observed in cases of pheochromocytoma, it has also been described in patients with myelolipoma, metastatic lesions, adrenocortical carcinoma, adenoma, or hemangioma [8]. The clinical features of adrenal hemorrhage are non-specific, including: abdominal pain, nausea, vomiting, hypotension, hypertension, low-grade fever, agitation, and decreased hematocrit [9]. The adrenal gland is also

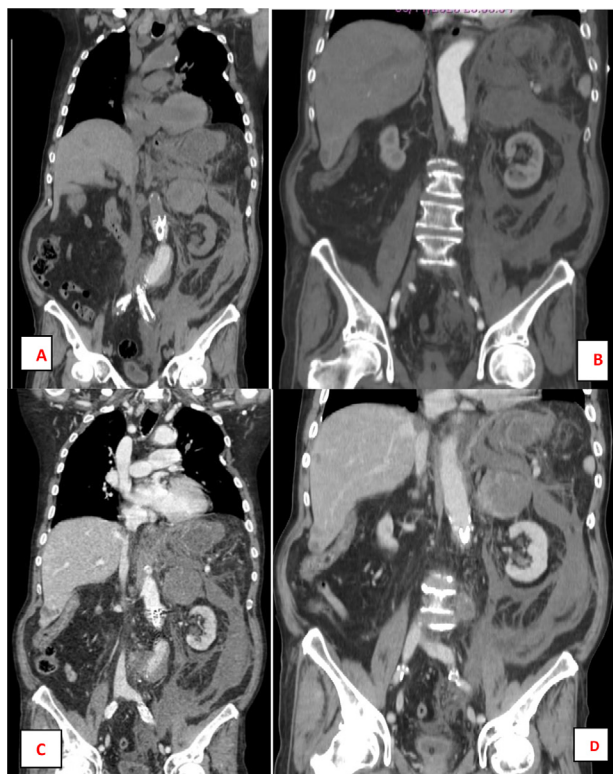


Fig. 4 – Coronal CT reconstructions well show the hemorrhagic left adrenal metastasis (8 cm), and also allow an overview of the extent of bleeding in the left abdominal quadrants, in the basal phase (A), arterial phase (B), portal phases (C), and in the late contrastographic study (D).

commonly the site of metastases and hemorrhages, as well as, to a lesser degree, primary tumors [10,11]. Differentiating between potentially malignant and benign lesions is very important. Although adrenal hemorrhage is rare, its consequences are potentially fatal, especially if it is not diagnosed in a timely manner. Therefore, the radiologist must be familiar with the main imaging features of adrenal hemorrhage. Acute hemorrhage is characterized by the development of a mass, with hypoattenuation or heterogeneous attenuation, that fails to present enhancement after the infusion of contrast, in one or both of the adrenal glands. Other features that may be observed in acute adrenal hemorrhage include periadrenal infiltrate, active extravasation with retroperitoneal bleeding. In cases of adrenal hemorrhage, the bleeding is often continuous until the gland expands beyond its normal shape, and a rounded or oval hematoma forms around the gland. Such hematomas vary in size from a few centimeters to more than 10cm. On CT, they are characterized as circular masses with no contrast enhancement and attenuation greater than that of the liquids similar [12,13]. When there is suspicion of adrenal disease in a patient with retroperitoneal hemorrhage, hemodynamic monitoring, preferably in an intensive care unit, is recommended. First, in patients with active bleeding and

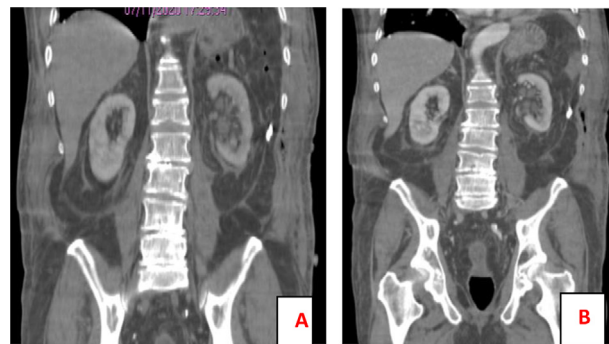


Fig. 5 – (A-B) Contrast-enhancement CT one week after the surgery (adrenalectomy), with coronal reconstructions (A-B), showed that the left retroperitoneal hematoma was in the reabsorbing phase. There were no other nodular lesions in the left adrenal region.

hemodynamically stable, angiographic embolization is a valuable tool to achieve hemostasis. But, as in Case 2, if the conditions of the patient deteriorates, surgical option is necessary [14]. Hemorrhagic adrenal metastasis is rare, although adrenal metastases are common [15,16]. Patients with hemorrhagic adrenal metastases are usually symptomatic and typically experience acute onset of pain. Massive adrenal hemorrhage can be the initial clinical manifestation of a metastatic tumor. Bronchogenic carcinoma, colon cancer, renal cancer and melanoma are the most common causes of hemorrhagic adrenal metastases. Intratumoral hemorrhage (as in Case 2) may occur in a patient with metastatic melanoma [17].

Conclusions

Both of the cases described give a picture of retroperitoneal hemorrhage, from different causes, which represent a real urgency, to be treated in the shortest possible time to save patient's lives. CT is very important for an early and correct diagnosis, to individuate the site of bleeding, the complications, and for the better and appropriate management/outcome of the patients.

Patient consent

The patient confirmed the consent for publication of our case report.

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