ntravascular blood pool agents, such as $^{99}$m Tc labeled red blood cells, are the agents of choice in the investigation of gastrointestinal (GI) hemorrhage, especially in cases of slow or intermittent bleeding, with a sensitivity greater than 90%.1 If the activity remains in the same location, static vascular abnormalities, such as aneurysm or angiodysplasia, should be suspected. 2

A 35-year old female was presented with fever to the Infectious Diseases Clinic. She had chronic renal failure secondary to familial Mediterranean fever and was on renal dialysis program. After admission, her hematocrit level dropped progressively; from 9.4 gr/dl at admission to 6.78 gr/dl in four days.

The patient has a history of cranial aneurysm and pelvic hematoma. She had been to another hospital where cranial angiography was performed one month ago. Cranial aneurysm was coincidentally detected. The procedure was complicated with a pelvic hematoma which was drained twi-
ce at the same hospital where cranial angiography was performed. No further history was received.

For two months she was in and out of the hospital. During this period she had two abdominal Computed Tomography (CT); one each month; and a series of ultrasound (US) examinations. Tc-99m red blood cell (RBC) bleeding scan using in vivo method was performed. Ultrasonography showed a well delineated hypoechoic fluid collection adjacent to iliopelvic region extending to the right iliac artery and vein at the right lower pelvic area (Figure 1). Computed Tomography showed a large hematoma measuring 13x9 cm on the axial axis, extending from right parailiac area to the perineum; shifting rectosigmoid, rectum and uterus to the left side (Figure 2). No progressive change was detected between CT and US examinations.

Clinicians could not decide whether it is an active bleeding or a stable hematoma as suggested by the radiologists. Hematoma this size can be the cause of this low hematocrit level. Then Tc-99m RBC study was requested.

Flow phase of the Tc-99m RBC study was normal. In the early phase of the study (blood pool) there was mild spreading of the labeled erythrocytes in the left parailiac area and an increase in activity was noted in the sequential dynamic frames. Late phase (3 hours later) images showed right parailiac accumulation of labeled erythrocytes extending to the interiliac and genital area. Tc-99m

FIGURE 1A and B: US showed hypoechoic fluid collection with well delineated borders. Arrows show the borders of the hematoma. No prominent change was noted in between the examinations. M: mass (hematoma)

FIGURE 2A and B: Noncontrast abdominopelvic CT examinations of the patient revealing a mass located at the parailiac region extending to the perineum, shifting rectum and uterus to the left side, consistent with hematoma. No significant progressive change was noted between the two episodes in a month interval. Arrows show the borders of the M: mass (hematoma). R: rectum; U: uterus
RBC scan showed active bleeding into the pre-existing hematoma space, which did not move (Figure 3).

Finally, surgeons explored the hematoma. Two branches of the external iliac vein were ligated during the operation.

The main purpose of the gastrointestinal bleeding study is to diagnose and to locate the site of active intraluminal bleeding. The evaluation of active bleeding into hematoma using radionuclide methods is not a common practice. It may also be wise to try radionuclide angiography for extra-gastrointestinal hemorrhage. Unlike the intermittent nature of Tc-99m RBC extravasation seen in lower gastrointestinal hemorrhage, bleeding into hematomas is continuous from a vascular source. Conventional radiographic studies are important in the anatomic identification of fluid collection but their ability to determine the presence of active bleeding is limited. Patients who are not suitable for iodinated contrast media; particularly the ones with abnormal renal functions; are more likely to benefit from scintigraphic methods.

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### REFERENCES