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IMAGES IN CLINICAL RADIOLOGY

Renal fornix rupture following diagnostic coronarography

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A 31-year-old man with an uneventful medical history presented at the emergency department with complaints of exercise-related chest pain for 3 weeks. ECG showed ST-elevations in the inferior leads. A diagnostic coronarography was performed and showed multivessel coronary stenosis. During this procedure 200 ml of a nonionic, low-osmolality monomeric contrast agent (Iomeron 350®) and 1250 ml of isotonic saline solution was administered intravenously. After this procedure, the patient suffered from a sudden onset and progressive severe pain in the back and the right lumbar region. A plain CT of the abdomen performed 8 hours post coronarography showed contrast enhanced fluid in the renal sinus and the perinephric/peri-ureteral space (Fig. A (scout view), B (coronal) and C (sagittal) reformatted scans). There was a bladder overdistenstion with a CT-based volumetric estimation of 995 ml. No mechanical cause of upper urinary tract obstruction was present. Subsequent urological work-up included insertion of a bladder catheter (24 hours) and administration of peroral antibiotics. Ultrasound follow-up on the next day revealed no abnormalities and the patient was discharged.

Comment

Three major factors are required to explain extravasation of urine (urinoma) from the renal collecting system: a functioning kidney, a tear in the collecting system and urinary outflow obstruction. Rupture of the weakest area of the collecting system, i.e. the calyceal fornix, occurs when the pressure in the pelvicaliceal system exceeds a critical level (variously reported as being between 20-75 mm Hg). The extent and the speed of increase of pressure in the renal fornix are determining factors for rupture. The most common non-traumatic and non-iatrogenic cause of urine extravasation is an acute mechanical ureteral obstruction caused by an impacted urinary stone. Pre-existing urinary disease (i.e. prostate hyperplasia, repeated mechanical stress by vesicoureteral reflux or pyelosinus backflow) or a history of previous acute episodes of mechanical obstruction contribute to an increased risk of future forniceal ruptures. Functional causes of ureteral obstruction are often related to bladder pathology, such as a neurogenic bladder, detrusor muscle deficiency or detrusor sphincter dyssynergia. Hyperdiuresis, either by instrinsic pathologies such as diabetes insipidus, alcohol abuse or iatrogenic conditions including overhydratation or the use of high-osmolality contrast agents, can also increase the pressure in the renal collecting system. In the case presented here, the cause of extravasation is most likely explained by a combination of increased diuresis (due to intravenous overhydratation) and overdistension of the urinary bladder. This unusual presentation is not previously reported in the literature. Complications of urinoma are generally rare as urine is reabsorbed quickly from the retroperitoneal tissues, except with urinary infection or persistent obstruction and/or leakage.

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