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Grade V kidney trauma (shattered kidney) eventually needing nephrectomy after initially successful conservative treatment – a case presentation

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Introduction & Objectives: The severest, grade V kidney traumas are rare and their management can present a challenge. Recent guidelines suggest conservative treatment for haemodynamically stable kidney trauma patients.

Materials & Methods: A 16-year-old male was urgently admitted to the hospital due to pain in the right flank and visible haematuria after a blunt abdominal trauma. Patient was haemodynamically stable (blood pressure, BP 131/86mmHg; heart rate, HR 76/min) with haemoglobin, Hgb 145g/l and haematocrit 38.8%. The abdominal examination did not show signs of peritoneal irritation; there was a palpable painful right flank haematoma. CT-scan showed a shattered right kidney (grade V injury) with blood extravasation from the lower branch of the right renal artery and a hematoma extending from the lower part of the liver to the pelvis. There was no urinary leakage during the late phase CT-scan.
The endovascular treatment was initiated. At angiography, there was continuous bleeding from the lower branch of the renal artery which was closed with one endovascular microcoil subselectively.
By the next day, the size of the palpable haematoma had decreased. Twenty-two hours after the angiography, CT-scan showed contrastation around the ruptured upper pole of the right kidney without clear arterial extravasation; retroperitoneal haematoma had not enlarged. The angiography procedure was not repeated due to haematoma at the femoral artery puncture site.
In the next few hours the patient developed worsening tachycardia (HR 80->95->104/min) with a simultaneous decrease in Hgb level (125->93->84 g/l) and platelet count (162->106->77 x10^9/l); the patient's BP remained stable.
Decision to perform emergency surgery was made based on clinical suspicion of continuous bleeding, corroborated by results of the second CT-scan.

Results: At trauma laparotomy there were 300ml of fresh blood in abdominal cavity around the spleen, no injuries of abdominal or pelvic organs were detected. After selective ligation of the right renal artery and vein, right retroperitoneal space was opened revealing haematoma of 400ml and fragments of the right kidney. Right nephrectomy was performed.
The patient was discharged in good health and with good kidney function on the sixth postoperative day.

Conclusions: In this grade V kidney trauma case, the patient's stable condition made conservative management initially possible. Emergency nephrectomy was eventually necessary due to clinical destabilisation. The blood from retroperitoneal space had broken into the intraperitoneal cavity which was the reason for the deterioration of clinical condition as well as for the unchanged finding of retroperitoneal haematoma on the CT-scan. This case report emphasises the importance of very close observation of clinical signs on kidney trauma patients.