ACUTE RENAL FAILURE MIMICKING URINARY BLADDER INJURY AFTER CAESAREAN SECTION

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INTRODUCTION

Acute renal failure (ARF) is now a rare, but serious complication of pregnancy. Nonpregnant patients who suffer an acute prerenal insult, such as hemorrhage, dehydration, or septic shock, may develop transient acute tubular necrosis (ATN) if inadequately treated. The same prerenal insult in pregnancy is more likely to develop into renal cortical necrosis with permanent renal impairment. Acute renal cortical necrosis (ACRN) has become a rare complication of pregnancy. The reduced incidence of septic abortion and improved management of peripartum obstetric emergencies has prevented prerenal impairment developing into ATN and then renal ARCN[1].

CASE REPORT

A 24 year old third gravida with previous two caesarean sections was booked at CMH Murree for elective operation. She had two uneventful previous pregnancies. Her caesarean section was performed on 01 Sep 2010. During operation a bleeder was noted at the anterior surface of urinary bladder which was stitched with chromic catgut. Haematuria was noticed just after operation which cleared by evening. Renal function tests were normal. Patient was advised to retain urinary catheter for 48 to 72 hours. She was discharged on the third post-operative day. Foley catheter was removed before discharge.

After 03 days on 05 Sep 2010 afternoon she reported back in gynea OPD with complaints of generalized aches and abdominal distention. On examination vital signs were normal but abdomen was markedly distended. Ultrasound in gynea OPD showed free fluid in abdomen and pelvis. She was immediately admitted, shifted to intensive care unit on the suspicion of "bladder perforation" at stitch site due to necrosis. Investigations were sent and I/V antibiotics were started. When urinary catheter was passed there was output of 9000 ml urine which was amazing. Abdominal distention and discomfort was decreased. It was a strong suspicion that site of the bleeder which was stitched during operation has given way and all urine has been collected in abdomen and rent is so large that Foley catheter that was passed has gone in abdomen through the rent. Ultrasound was also done by radiologist which showed swollen kidneys and free fluid in abdomen and pelvis.

Patient was managed conservatively. Serum urea and creatinine showed a raised level. Cystogram was done on 6 Sep 2010 which showed contrast in urinary bladder with no peritoneal leak (Figure).

Figure: Cystogram of Patient

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On the basis of symptoms and investigations, she was diagnosed a case of recovery phase (diuretic phase) of acute renal failure due to hypotension after operation. She was kept on conservative management. Her symptoms were relieved within 24 hours and renal functions also returned to normal. Patient was discharged after 03 days. Follow up in outdoor till 6 weeks remained uneventful.

DISCUSSION

Acute renal failure (ARF) is a syndrome characterized by rapid decline in glomerular filtration rate (hours to days), retention of nitrogenous waste products and perturbation of extracellular fluid volume and electrolyte and acid-base homeostasis. ARF comprise approximately 5% of hospital admissions to intensive care units[2].

Mostly ARF is reversible, the kidney being relatively unique among major organs in its ability to recover from almost complete loss of function. Most intrinsic renal ARF is triggered by ischemia or nephrotoxins. The course of ischemic ARF is typically characterized by three phases: the initiation, maintenance, and recovery phases. The initiation phase (hours to days) is the initial period of renal hypoperfusion during which ischemic injury is evolving, GFR declines because:-

- Glomerular ultrafiltration pressure is reduced as a consequence of the fall in renal blood flow.
- The flow of glomerular filtrate within tubules is obstructed by casts comprising epithelial cells and necrotic debris derived from ischemic tubule epithelium.
- There is backleak of glomerular filtrate through injured tubular epithelium.

The initiation phase is followed by a maintenance phase (typically 1 to 2 weeks) during which renal cell injury is established, GFR stabilizes at its nadir (typically 5 to 10 mL/min), urine output is lowest, and uremic complications arise.

A recovery phase is characterized by renal parenchymal cell repair towards premorbid levels complicated by a marked diuretic phase due to excretion of retained salt and water and other solutes[2, 3].

Clinical clues to prerenal ARF are symptoms of thirst and orthostatic dizziness and physical evidence of orthostatic hypotension and tachycardia, reduced jugular venous pressure, decreased skin turgor, dry mucous membranes, and reduced axillary sweating.

Anuria suggests complete urinary tract obstruction but may complicate severe cases of prerenal or intrinsic renal ARF. Glomerular casts and casts containing tubule epithelial cells are characteristic of ATN and suggest ischemic or nephrotoxic ARF. Casts are found in 20 to 30% of patients with ischemic or nephrotoxic ARF and are not a requisite for diagnosis[4, 5].

Increased urine protein excretion, but < 1 g/d, is common in ATN due to failure of injured proximal tubules to reabsorb filtered protein and excretion of cellular debris. Indices of urinary concentrating ability such as urine specific gravity, urine osmolality, urine-to-plasma urea ratio, and blood urea-to-creatinine ratio are of limited value in differential diagnosis. Creatinine rises rapidly (within 24 to 48h) in patients with ARF following renal ischemia. Peak creatinine levels are observed after 3 to 5 days with contrast nephropathy and return to baseline after 5 to 7 days [1, 2, 6].

Imaging of the urinary tract by ultrasonography is useful. Renal biopsy is particularly useful when clinical assessment and laboratory investigations suggest diagnosis other than ischemic or nephrotoxic injury.

Learning Outcome

We learnt from this case to always keep a high index of suspicion for urinary tract injuries in a complicated pelvic surgery. Once excluded (by IVU, cystogram and ultrasound) other post-operative morbidities related to haemorrhage and infection must be thought of. Actual renal failure is one of these complications secondary to post-operative/intra-operative haemorrhage which respond well to conservative management, as demonstrated in this case,

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