A renal transplant recipient becomes oliguric 5 days after surgery. A temperature of 37.80°C is noted and he is tender over the graft. List the causes. Outline the management.

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Causes

• Renal allograft rejection
• Urinary obstruction
• Vascular obstruction
• Infection
• Cyclosporin or tacrolimus nephrotoxicity
• Hyperglycaemia (pseudo-rejection)
• Dehydration
Management

• Does this patient need resuscitation?
  – BP, PR, Fever
  – iv drip, blood and urine culture before antibiotics.

• Fever
  – Infection, rejection

• Physical examination
  – Sinusitis, dental abscess, pneumonia, cholecystitis, appendicitis, diverticulitis and kidney graft tenderness.

• Tremor
  – Calcinurin inhibitor toxicity (tacrolimus / cyclosporin)
  – Do calcinutin blood level.

• Psuedorejection of hyperglycaemia
  – Do random blood sugar
  – In diabetic patients
  – due to the increased serum osmolarity and resulting intracellular dehydration associated with hyperglycemia

• Dehydration
  – 5-10ml/kg of iv fluid.
• Ultrasound + doppler
  – Can demonstrate renal allograft enlargement
  – Assess hydronephrosis → **urinary obstruction**
    • **ureteral obstruction**
      – Technical error
        » Repair with stented ureteroneocystostomy
    – Edema
      » Resolves in a few days
    – **Blood clot**
      » Will lyse
    – **Unsuspected donor calculus**
    – **Perigraft fluid collection**
      » Usg guided drainage
  • **Bladder outlet obstruction**
    – Blood flow in & out of graft → **vascular obstruction** → do CTA
      • **Kinking of the kidney graft’s artery or vein**
      • **Suture line stenosis**
      • **thrombosis**
        » Redo surgery
  – Assess gall bladder
  – Assess native kidney for stones and obstruction
• Renal biopsy
  – graft rejection
• Renal scintigraphy (MAG3)
  – In acute antibody mediated rejection there is absent perfusion and function.
## Sorting Out Early Graft Dysfunction

<table>
<thead>
<tr>
<th>CAUSE</th>
<th>PHYSICAL FINDING</th>
<th>INITIAL DIAGNOSTICS BASED ON SUSPICION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection</td>
<td>Fever, chills, normal or ↓ BP, ± pulmonary findings, ± native or kidney transplant tenderness</td>
<td>Chest radiograph, urinalysis, smears and cultures of sputum, urine, wound drainage, and blood; ultrasonogram of abdomen and kidney graft</td>
</tr>
<tr>
<td>Rejection</td>
<td>± Fever, normal or ↑ BP, normal or ↑ CVP, kidney transplant tenderness</td>
<td>Ultrasound of kidney graft, allograft biopsy</td>
</tr>
<tr>
<td>Obstruction</td>
<td>Vital signs normal unless infected, ± kidney transplant tenderness</td>
<td>Irrigate bladder catheter, ultrasound and Doppler flow study of kidney graft</td>
</tr>
<tr>
<td>Calcineurin inhibitor toxicity</td>
<td>Afebrile, normal or ↑ BP, normal CVP, ± tremor</td>
<td>Calcineurin inhibitor blood level</td>
</tr>
<tr>
<td>Hyperglycemia</td>
<td>Afebrile, ↓ BP, ↓ CVP</td>
<td>Blood sugar</td>
</tr>
<tr>
<td>Dehydration</td>
<td>Afebrile, ↓ BP, ↓ CVP</td>
<td>IV fluid bolus</td>
</tr>
</tbody>
</table>

BP, blood pressure; CVP, central venous pressure; IV, intravenous.
<table>
<thead>
<tr>
<th>CHARACTERISTIC</th>
<th>TACROLIMUS OR CYCLOSPORINE TOXICITY</th>
<th>ACUTE REJECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Urinary output</td>
<td>Usually maintained</td>
<td>Decreased</td>
</tr>
<tr>
<td>Graft tenderness</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Graft size</td>
<td>Stable</td>
<td>Increased</td>
</tr>
<tr>
<td>Serum creatinine level rise</td>
<td>Slow</td>
<td>Rapid</td>
</tr>
<tr>
<td>Cyclosporine/tacrolimus blood level</td>
<td>High</td>
<td>Normal or low</td>
</tr>
<tr>
<td>Graft biopsy</td>
<td>May be normal</td>
<td>Cellular infiltration, vasculitis, tubulitis</td>
</tr>
</tbody>
</table>