QUESTION 63

Which pathologic process on renal biopsy is most characteristic of acute vascular renal transplant rejection?

- A. Eosinophil infiltration
- B. Macrophage infiltration
- C. T lymphocyte infiltration
- D. Interstitial haemorrhage
- E. Mesangial proliferation

ACUTE RENAL ALLOGRAFT REJECTION

- Definition: acute deterioration in allograft function that is associated with specific pathological changes in the graft
- About 10-15% of pts will have episode of rejection
- Lower rejection rates with more potent immunosuppression
- Acute rejection episodes is major predictor of chronic rejection and is associated with reduced graft survival, especially in early rejection (<60 days)
- Most episodes of rejection occur in first 6 months
- Suspect in pts with rising Cr +/- HT +/- reduced UO
- May be otherwise asymptomatic – graft tenderness/swelling uncommon

Acute Cellular Rejection

- Interstitial infiltration with mononuclear cells and occasionally eosinophils
- Disruption of tubular basement membranes (tubulitis) by infiltrating cells
- Presence of patchy mononuclear cell infiltrates without tubulitis not uncommon in normal functioning renal allografts and is no enough to make diagnosis of rejection

Acute Antibody-Mediated Rejection

- AKA vascular rejection
- Capillary endothelial swelling
- Arteriolar fibrinoid necrosis
- Fibrin thrombi in glomerular capillaries
- Cortical necrosis in severe cases
- Vasculitis, glomerulitis, interstitial haemorrhage  are more common in antibody than cellular rejection

DDx

- PTLD (post-transplant lymphoproliferative disorder)
- BK virus
- Other viruses

Treatment Options
- Pulse steroids
- Antibodies – polyclonal anti-T cell antibodies (antithymocyte globulin), OKT3 (Ab to CD3 antigen)
- Manipulation of baseline immunosuppression
- Rescue tacrolimus or mycophenylate
- Antibodies seem to be most effective
- Complications of Ab treatment include anaphylaxis (rare), pruritis, thrombocytopenia, infections, PTLD
- OKT3 has higher risk of adverse reactions – infection, lymphoproliferative disorders associated with EBV, pulmonary oedema, HUS

Back to the question...

A. Eosinophilic infiltration occurs in cellular rejection but is not a prominent feature
B. Macrophage infiltration occurs in cellular rejection and is the main feature
C. T lymphocyte infiltration does not really occur in either but is a target or antibody therapy to reduce the cellular-mediated immune reaction
D. Interstitial haemorrhage occurs in antibody-mediated rejection and although not the only feature it is indicative of vascular rejection
E. Mesangial proliferation is not really associated with rejection

Acute cellular rejection in a renal transplant shows diffuse interstitial infiltrate of mononuclear cells, some of which are actively invading the tubules (arrow). Courtesy of Helmut Rennke, MD.
Acute vascular rejection in a renal transplant. Note that the inflammatory infiltrate is limited to the expanded intima, and does not involve the entire vascular wall as in a systemic vasculitis. Courtesy of Helmut Rennke, MD.