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Histopathologic Characteristics of Acute Cellular Allograft Rejection

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Acute cellular rejection is the usual form of rejection that develops most commonly in the 1st 4 weeks after transplantation. It can arise in normally functioning kidney at any time (from 3 days to 10 or more years) or in a graft affected with other conditions, such as ATN, chronic rejection or CsA toxicity. Acute cellular rejection is mediated primarily by T-cell reacting to donor histocompatibility antigens and affects the interstitium, tubules, vessels and glomeruli. Glomerulitis is present to some degree in about half of the biopsies, showing scattered mononuclear cells with endothelial damage. Severe forms are considered as acute allograft glomerulopathy. Tubules show infiltrations of mononuclear cells between the basal lamina and epithelial cells with occasional perinuclear halo (tubulitis, CCTT/Banff type I), involving proximal and distal tubules. Artery and arterioles show subendothelial mononuclear cell infiltrations, which are called as endothelialitis or endarteritis (CCTT/Banff type II), involving arteries of all size. Interstitiums show mononuclear cell infiltrations, consisted of T-cells and macrophages, with edema and sometimes hemorrhages (CCTT/Banff type I). Biopsy is particularly useful to separate acute rejection from ATN, CsA toxicity, infection, recurrence and chronic rejection.