IMPACT OF A HIGH-FAT DIET ON RENAL HISTOPATHOLOGY IN MURINE SCHISTOSOMIASIS

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Schistosomiasis is a neglected tropical disease commonly associated with renal complications, including glomerular damage. To investigate the effects of a high-fat diet (HFD) on renal glomerular histopathology and cytokine production, twenty female Swiss Webster mice were fed their respective diets for 29 weeks, with infection introduced after 21 weeks (infected with 100 cercariae from BH stain) and divided into four groups: CDP (control), CDH (HFD, uninfected), IDP (SD and infected), and IDH (HFD and infected). Cytokine production (IL-6, IL-12, TNF-α, IL-10, MCP-1/CCL2, and IFN-γ) were also evaluated. To evaluate glomerular areas, tissue damage, and capillary vascularization, histological sections were stained in Hematoxylin-Eosin and Picrosirius Red to assess collagen deposition. The HFD induced glomerular hypertrophy, increasing total glomerular area (63%) (CDH vs. CDP), along with increased collagen deposition and vascular alterations. These changes were exacerbated in infected mice. Schistosomiasis infection led to glomerular disorganization and a reduction in capillary areas in CDH and IDP groups (42% and 58% respectively). Histopathological changes included Bowman's space expansion, mesangial hypertrophy, and vascular remodeling in IDP, CDH and IDH groups. TNF-α levels were elevated (533%) in the HFD-infected group (IDH vs. CDP), indicating a synergistic pro-inflammatory effect of diet and infection. In contrast, IL-10 levels increased (346%) in IDH and IDP groups, suggesting an anti-inflammatory response, while MCP-1/CCL2 levels rose sharply (680%) (IDH vs. IDP), indicating increased monocyte recruitment. These findings highlight the interaction between high-fat diets and schistosomiasis in exacerbating renal damage, emphasizing the dual role of pro- and anti-inflammatory cytokines.

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