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Effect of mast cell stabilization on angiogenesis in primary and secondary experimental *Trichinella spiralis* infection.

Parasites & Vectors (2021) NOV.6 ;14 (1) :567

ABSTRACT :

Background:

Mast cells are known to affect the primary and secondary immune responses against parasites, and this effect is partially mediated through the release of pro-angiogenic mediators. The aim of this study was to explore the effect of the mast cell stabilizer (MCS), ketotifen, with and without albendazole, an anti-parasitic prescription medicine, on the inflammatory response against *Trichinella spiralis*, with the overall aim to investigate its effect on angiogenesis accompanying nurse cell formation.

Methods:

The effect of ketotifen and albendazole was explored in eight groups of female BALB/c mice. Four groups were sensitized with a small dose of *T. spiralis* larvae. The drug regimen was then applied to both sensitized (challenged) and non-sensitized mice. The parasite load was assessed by histopathological examination of the small intestine and muscle tissue, and angiogenesis was assessed by immunohistochemistry to determine the expression of vascular endothelial growth factor (VEGF).

Results:

Sensitized mice showed a significantly lower parasite load and a more pronounced inflammatory response than mice receiving a single infective dose of *T. spiralis* larvae. All treated groups showed a significant reduction in parasite count compared to the control groups (groups IAa and IBa), reaching

approximately an 98.8% reduction in adult parasite count in the sensitized group treated with albendazole (groups IIAb and IIBb). MCS significantly decreased the parasite count during both the intestinal or muscular phases, reduced tissue inflammation, and decreased local VEGF expression, both in the non-sensitized and sensitized groups.

Conclusion:

Sensitization with a low dose of *T. spiralis* larvae was found to confer a partial protective immunity against re-infection and to positively affect the study outcomes, thus underlining the importance of vaccination, but after extensive studies. The anti-angiogenic effect of MCS protects against larval encystation during the muscle phase. The anti-angiogenic potential of albendazole suggests that the action of this anti-helminthic during trichinellosis is not confined to structural damage to the parasite cuticle but includes an effect on host immunopathological response.

Keywords: *T. spiralis*, Mast cells, Ketotifen, Albendazole, Angiogenesis, VEGF