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A histological study of eosinophilic granuloma in mice following infestation with Anisakis larvae

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Anisakidosis is a parasitic anthropozoonosis caused by the nematode larvae of the *Anisakidae* family. Anisakid nematodes belonging to the *Anisakis pegreffii* are highly prevalent in several fish species living in the Mediterranean sea. The larvae can accidentally infect humans following the ingestion of infected raw or undercooked sea fish. A migrating larva causes a clinical disease when it invades the stomach or intestinal wall and peritoneum, mimicking an eosinophilic gastroenteritis or an ulcer. In this preliminary experiment, the histopathology of the newly-formed parasitic granulomas in mice infested with third stage *Anisakis pegreffii* larvae, was studied and described.

The larvae were morphologically identified as Anisakis type I by the presence of a boring tooth and a mucron, without ventriculus and caecum. The larval DNA was extracted and amplified by polymerase chain reaction (PCR). After PCR, the samples were processed to undergo restriction fragment length polymorphism analysis (RFLP). This was done to scan the restriction profiles for genetic identification. PCR products were purified and sequenced. The sequences were analysed to detect the relationship between nucleotides and perform a phylogenetic analysis.

The paraffin-embedded granuloma samples showed worms having a diameter of 0.55 mm x 0.37 mm, polymyarian muscle cells and a circular intestine. The histological profiles showed a primary lesion at the site of anisakid penetration marked by oedema and neutrophil and eosinophil infiltration. The presence of histiocytes or epithelioid histiocytes, lymphocytes, monocytes, and plasma cells was also possible. Fibrinous exudation, hemorrhage, or vascular damage were detected within the first week of the acute intestine infection with a massive eosinophilic infiltration. Two weeks after the infestation, the infiltrating host cells formed a granuloma in the tissue surrounding the penetrated worm mainly consisting of eosinophils, a large number of fibroblasts and a varying number of admixed multinucleated giant cells.

In order to explain the origin of the eosinophilic granulomas, a study into the produced substance attracting eosinophils and other host white blood cells to the area will carry out.

Keywords

Anisakis, Anisakidosis, nematode, rat, eosinophilic granuloma, fish, anthropozoonosis.