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Anisakidosis in Turkey: Serological Survey and Risk for Humans

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Abstract : Anisakidosis is a zoonotic human fish-borne parasitic disease caused by accidental ingestion of anisakid third-stage larvae (L3) of members of the Anisakidae family present in infected marine fish or cephalopods. Infection with anisakid larvae can lead to gastric, intestinal, extra-gastrointestinal and gastroallergic forms of the disease. Anisakid parasites have been reported in almost all seas, particularly in the Mediterranean Sea. There is a remarkably high level of risk exposure to these zoonotic parasites as they are present in economically and ecologically important fish of Europe. Anisakid L3 larvae have been also detected in several fish species from the Aegean Sea. Turkey is a peninsular country surrounded by Black, Aegean and the Mediterranean Sea. In this country, fishing habit and fishery product consumption are highly common. In recent years, there was also an increase in the consumption of raw fish due to the increasing interest in the cuisine of the Far East countries. In different regions of Turkey, A. simplex (inMerluccius Merluccius Scomber japonicus, Trachurus mediterraneus, Sardina pilchardus, Engraulis encrasicolus, etc.), Anisakis spp., Contraceucum spp., Pseudoterronova spp. and, C. aduncum were identified as well. Although it is accepted both the presence of anisakid parasites in fish and fishery products in Turkey and the presence of Turkish people with allergic manifestations after fish consumption, there are no reports of human anisakiasis in this country. Given the high prevalence of anisakid parasites in the country, the absence of reports is likely not due to the absence of clinical cases rather to the unavailability of diagnostic tools and the low awareness of the presence of this infection. The aim of the study was to set up an IgE-Western Blot (WB) based test to detect the anisakidosis sensitization among Turkish people with a history of allergic manifestation related to fish consumption. To this end, crude worm antigens (CWA) and allergen enriched fraction (50-66%) were prepared from L3 of A. simplex (s.l.) collected from Lepidopus caudatus fished in the Mediterranean Sea. These proteins were electrophoretically separated and transferred into the nitrocellulose membranes. By WB, specific proteins recognized by positive control serum samples from sensitized patients were visualized on nitrocellulose membranes by a colorimetric reaction. The CWA and 50–66% fraction showed specific bands, mainly due to Ani s 1 (20-22 kD) and Ani s 4 (9-10 kD). So far, a total of 7 serum samples from people with allergic manifestation and positive skin prick test (SPT) after fish consumption, have been tested and all of them resulted negative by WB, indicating the lack of sensitization to anisakids. This preliminary study allowed to set up a specific test and evidence the lack of correlation between both tests, SPT and WB. However, the sample size should be increased to estimate the anisakidosis burden in Turkish people.

Keywords : anisakidosis, fish parasite, serodiagnosis, Turkey
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