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Immunopathogenesis of swine neurocysticercosis after anti-parasitic therapy

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Neurocysticercosis is caused by *Taenia Solium* larvae. It is the most common helminthic infection in human. It causes variable clinical manifestations. Albendazole (ABZ) is the drug of choice for *Taenia Solium* infection. So, we studied the local immune response operation at viable and degenerating cysts with and without albendazole treatment. Cysticercotic swine (n=30) were subjected to magnetic resonance imaging (MRI). Swine were divided in to three groups; group 1 received no treatment, group 2 treated with ABZ and group treated with ABZ plus steroid (ABZS). Group 2 and 3 underwent follow-up MRIs at 6 and 12 weeks and then sacrificed. Tissues surrounding the cysticerci were collected and studied for the expression of adhesion molecules, chemokines and matrix metalloproteinases by qRT-PCR and ELISA. Gel zymography was done to check the activities of MMPs. Genetic characterization of cysticerci was done using cox1 gene. Genetic characterization showed the Asian genotype of *T. solium* with minimal genetic variation. We also reported for the first time about the existence of *T. asiatica* in India. In group 1, the expressions of ICAM-1, E-selectin, MIP-1 α , RANTES and EOTAXIN-1 were associated with degenerating cysts whereas MMP-2, -9, VCAM-1 and MCP-1 were associated with viable cysts. In group 2 and 3, ABZ therapy was found to be more effective in parasite killing than ABZS. In group 2, all cysts responded ABZ therapy and induced the expression all above immune markers except VCAM-1 and MIP-1 around the dead cysticerci. In group 3, despite a heavy parasite burden in the brain, all the pigs treated with ABZS survived. MMP-9, ICAM-1, E-selectin and RANTES expressions were associated with dying/ dead cyst when compared to viable cysts.

Biography

Satyendra Kumar Singh is pursuing his PhD from Sanjay Gandhi Postgraduate Institute of medical sciences, Lucknow (U.P) 226014, India. He has published seven publications in the peer-reviewed international journals. His paper presented in 4th National Conference of The Indian Academy of Tropical Parasitology- 2010, was awarded the prestigious "The Best Oral Paper Prize- 2010". The title of his PhD work is "Immunopathogenesis of neurocysticercosis in naturally infected swine".

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