

Isolation and Identification of *Sarcocystis suihominis* in a Slaughtered Domestic Pig (*Sus scrofa*) in Benue State, Nigeria

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Abstract : *Sarcocystis* sp. are Apicomplexan protozoan parasites with a life cycle that involves a predator and a prey as final and intermediate hosts, respectively. In tissues of the intermediate hosts, the parasites produce sarcocysts that vary in size and morphology according to the species. When a suitable predator ingests sarcocyst-containing meat, the parasites are released in the intestine and undergo sexual reproduction producing infective sporocysts, which are excreted with the feces into the environment. The cycle is closed when a prey ingests sporocyst-contaminated water or pasture; the parasites gain access to the circulation, and eventually invade tissues and reproduce asexually yielding sarcocysts. Pig farming is a common practice in Nigeria as well as in many countries around the world. In addition to its importance as protein source, pork is also a source of several pathogens relevant to humans. In the case of *Sarcocystis*, three species have been described both in domestic and wild pigs, namely, *S. miescheriana*, *S. porcifelis* and *S. suihominis*. Humans can act both as final and aberrant intermediate hosts of *S. suihominis*, after ingesting undercooked sarcocyst-infested pork. Infections are usually asymptomatic but can be associated with inappetence, nausea, vomiting and diarrhea, or with muscle pain, fever, eosinophilia and bronchospasm, in humans acting as final or intermediate hosts, respectively. Moreover, excretion of infective forms with human feces leads to further dissemination of the infection. In this study, macroscopic sarcocysts of white color, oval shape and a size range of approximately 3-5 mm were observed in the skeletal muscle of a slaughtered pig in an abattoir in Makurdi, Benue State, Nigeria, destined to human consumption. Sarcocysts were excised and washed in distilled water, and genomic DNA was extracted using a commercial kit. The near-complete length of the 18S rRNA gene was analyzed after PCR amplification of two overlapping fragments, each of which were submitted to direct sequencing. In addition, the mitochondrial cytochrome oxidase (cox-1) gene was PCR-amplified and directly sequenced. Two phylogenetic trees containing the obtained sequences along with available relevant 18S rRNA and cox-1 sequences were constructed by neighbor joining after alignment, using the corresponding sequences of *Toxoplasma gondii* as outgroup. The results showed in both cases that the analyzed sequences grouped with *S. suihominis* with high bootstrap value, confirming the identity of this macroscopic sarcocyst-forming parasite as *S. suihominis*. To the best of our knowledge, these results represent the first demonstration of this parasite in pigs of Nigeria and the largest sarcocysts described so far for *S. suihominis*. The close proximity between pigs and humans in pig farms, and the frequent poor sanitary conditions in human dwellings strongly suggest that the parasite undergoes the sexual stages of its life cycle in humans as final hosts. These findings provide an important reference for the examination and control of *Sarcocystis* species in pigs of Nigeria.

Keywords : nigerian, pork, sarcocystis suihominis, zoonotic parasite

Conference Title : ICVPPC 2023 : International Conference on Veterinary Parasitology and Parasite Control

Conference Location : New York, United States

Conference Dates : January 30-31, 2023