HISTOLOGICAL CHANGES OF INTESTINAL MUCOSA IN NATURAL INFESTATION WITH ASCARIS SUUM IN PIGS

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Summary

From 6 pigs aged 4 months to the coproparasitologic examination was positive for Ascaris suum, pieces of intestine were collected to carry out histological examinations. It was found that adults of Ascaris suum cause moderate damage to intestinal mucosal surface area of interest where it comes into contact with the parasite, accompanied by relatively discrete inflammatory reaction in the underlying lamina propria. Parasite does not induce serious harm to the intestinal mucosa whose functionality depends directly on its own existence. Relatively moderate nature of the injuries caused by adults of Ascaris suum in the intestinal mucosa explains the existence of a discrete clinical symptoms and difficult to interpret.

Key words: Ascaris suum, natural infestation, intestinal lesions

Introduction

Ascaris suum parasitism is relatively common in traditional growth of pigs, which cause considerable damage if not made antiparasitic treatments. Although modern farming systems pigs have reduced the impact of many parasitic disease in pig, infestation with Ascaris suum is present in industrial growth is difficult to find a free unit. The swine parasitic diseases have an insidious evolution observed in particular chronic forms and create difficulties in establishing an early diagnosis with negative economic consequences (Morar et al., 2005). A study in the United States of America, based on examination of stool samples of 84 breeding pigs in 15 states, considerate to have good management, showed the prevalence of Ascaris suum which was 70% (Kennedy et al., 1988). U.S. Department of Agriculture calculated on the basis of statistical data and some observations revealing weak infestation with Ascaris suum, losses caused by this parasite in 1994 amounting to 174 million dollars (Stewart, 1996). The livestock are infected subjects with a small number of parasites that have low pathogenicity and so their health is not affected. These animals are considered to carry the parasites and go unnoticed, but disseminate invasion elements in the external environment and contaminate the rest of the herd (Iacob, 2002).

Deepening conflict interrelations of host-parasite system, with adverse effects, pathogenic parasites of the body, debt is high interest for human and animal health (Suteu and Cozma, 2004). In this context we proposed verification in terms of histological lesions which it causes parasite, the intestinal mucosa.

Material and methods

The study was performed on 6 pigs aged 4 months, at which the examination was positive for coproparasitologic Ascaris suum. As the slaughter of animals were collected pieces of intestine in the form of slices with 5 mm thick, which were fixed in mixed-Heidenhain Susa. The end of the fixation, pieces were dehydrated with alcohol, butyl alcohol clarified and included in paraffin. Have been charged with section thickness of 5 micrometres and for Goldner tricrome staining method was
used. On histological sections were pursued lesions caused by adult parasites in the intestinal mucosa.

**Results and discussion**

Histological examination confirmed the diagnosis established by examination coproparazitologic, meaning that adult parasites were identified in the lumen of small intestine (Fig. 1).

The appearance of internal structures of parasites surprised the histological sections shows that they were living at the time of collection of samples of intestine which makes us confident that the existing changes in mucosal surface due to direct action of *Ascaris suum* adults. Injuries caused by pests interested third intestinal mucosal surface, be much more pronounced in the apical half of villus disorders (Fig. 2).

In the area of contact with the parasite, is currently a villus moderate edema (Fig. 3) and congestion of small vessels (Fig. 4) in the lamina propria surface.

Intestinal villi epithelium which is discolored alteration intensity is very different from one area to another. Necrotic surface epithelium (Fig. 5) appears to tip the villus denudation, most villus in contact area with the parasite, but only in their upper third, the rest is apparently normal epithelium.

Debris resulting from necrosis of surface epithelial cells can be observed either in the space between intestinal villi or, more commonly, it forms a kind of barrier which is interposed between the parasite and the intestinal mucosa (Fig. 6). Intestinal villi to shorten their peak necrosis and accumulation of debris on their surface, giving an appearance of compression zone in some parts the surface are relatively straight.

Of course these areas are largely out of service, but they are not too extensive, with practically only where the lining comes into contact with parasites. The depth of mucosal changes is present that can be appreciated that arose from adult parasites in the intestinal lumen action.

Our study reveals that adults of *Ascaris suum* not cause major intestinal mucosa. And those who appear interested only in intestinal mucosal surface area, in the profound changes which are not present can be attributed to *Ascaris suum* adult action. As enlargement, lesions occur in the area of contact with parasites and in the immediate vicinity, the main interest to the surface epithelium which is reacted or denude some areas.

In lamina propria underlying reaction is discreet reaction is predominantly small blood vessels that appear congested. In this way, the affected areas do not occupy only a small part of the intestinal mucosal surface and the rest lining shall not change detectable by optical microscopy. This explains why parasitism in adult *Ascaris suum* not expressed by marked clinical signs, unless infestation exceeds a certain level.

As beneficial conditions of the intestine, the parasite does not behave aggressively with the intestinal mucosa which ensures living conditions the better the more integrated and functional.

**Conclusions**

Adults of *Ascaris suum* cause intestinal mucosal surface, present only in the area of contact with parasites and accompanied by discreet inflammation.

The parasite does not behave very aggressively with the intestinal mucosa which ensures living conditions the better the more integrated and functional.

Relatively discrete lesions induced by *Ascaris suum* adults explain why parasitism is not accompanied by marked clinical signs, unless the infestation exceeds a certain level.
Fig. 1 *Ascaris suum* adult in the intestinal lumen (Goldner tricrome, 2X ob.)

Fig. 2 Compaction intestinal mucosa in contact with the parasite (Goldner tricrome, 10X ob.)

Fig. 3 Intestinal villi edema (Goldner tricrome, 40X ob.)

Fig. 4 Congestion of vessels in the apical third of intestinal villi (Goldner tricrome, 10X ob.)
Fig. 5 Surface zonal necrosis (Goldner tricrome, 40 X ob.)

Fig. 5 Debris from the apical pole of intestinal vili (Goldner tricrome, 40 X ob.)

References
