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Table 2: Identification of Mycobacterium species by swine production farms as a function of the state of origin

State of origin	MAH	Mycobacterium spp.	M. bovis	Negative	Number of samples
Goiás	01(10.00)	0 (0.00)	0 (0.00)	09 (90.00)	10
Minas Gerais	13 (18.06)	11 (15.28)	0 (0.00)	48 (66.67)	72
Mato Grosso do Sul	0 (0.00)	0 (0.00)	0 (0.00)	03 (100.00)	03
Mato Grosso	0 (0.00)	0 (0.00)	0 (0.00)	4 (100.00)	04
Paraná	17 (31.48)	06 (11.11)	0 (0.00)	31 (57.41)	54
Rio Grande do Sul	15 (28.30)	06 (11.32)	02 (3.77)	30 (56.60)	53
Santa Catarina	42 (24.85)	05 (2.96)	0 (0.00)	122 (72.19)	169
São Paulo	09 (27.27)	0 (0.00)	0 (0.00)	24 (72.73)	33

and the lymph nodes that showed histopathological lesions of granulomatous lymphadenitis. The present study shows a high prevalence of *MAH* causing GL in Brazilian farms, confirming this subspecies as the most prevalent in the swine population as it has been described in other countries. The hypothesis of fecal-oral transmission between animals may justify the permanence and prevalence of *MAH* subspecies in pig farms. The two samples that were positive for *M. bovis* were collected at the same slaughterhouse, but they were from different farms, located in different towns. Both of farms raise pigs and dairy cattle. Anyway the source of the infection was not defined. Nevertheless, due to the disease prevalence in pigs and differences in zoonotic potential between the etiological agents, lesions of porcine granulomatous lymphadenitis should be considered in the definitions of the exams performed by the SFI.

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P16

Pathologic diagnosis of zoonotic parasitosis in slaughter pigs in Brazil

Morés M.A.Z.[1], Morés N.[1], Albuquerque E.R.[2], Kich J.D.[1]

[1]Embrapa Suínos e Aves, Concórdia, Brazil, [2]Ministério da Agricultura e Abatecimento, Departamento de Inspeção de Produtos de Origem Animal, Brasília, Brazil

Introduction

Brazil is the fourth largest swine producer and pork exporter in the world, the slaughter under the federal meat inspection service achieved 37 million pigs in 2017 (https://sidra.ibge.gov.br). Brazilian meat inspection system is under a modernization process and new procedures are just standardized and regulated for pigs reared in farms submitted to health animal service rules. In order to supply the risk analysis for meat inspection modernization, several studies on zoonotic hazards were conducted in Brazil last years. This one was focused on zoonotic parasitosis once that in sanitary *post mortem* examination, the inspectors can identify lesions compatible with cysticercosis (Satyaprakash et al., 2018), hydatidosis (De La Rue, 2008) and sarcosporidiosis (Zainalabidin, et al., 2017).

Cysticercosis is caused by metacestodes of *Taenia solium*. Primarily, cysticercosis is an infection of pigs that act as an intermediate host of *T. solium*. Pigs are infected by ingestion of contaminated water, soil or feed with the eggs of *Taenia solium* expelled from tapeworm carriers. The eggs develop into cysticerci in various organs and musculature causing porcine cysticercosis characterized by small round whitish viscous cyst (7 to 15 mm), located mainly in the lingual muscles, masseters, heart and diaphragm (Satyaprakash et al. 2018).

Cystic echinococcosis is a zoonotic disease caused by the genus *Echinococcus* (*Cestoda: Taeniidae*). Pigs are considered important intermediate hosts of the larval stage by eggs ingestion from contaminated environment with feces of definitive host. The intermediated host develops hydatid cysts in the liver and the parasite cycle can be complete if a definitive host ingest this organ without a heat treatment (De La Rue, 2008).

Sarcosporidiosis is a disease caused by cyst forming coccidian, namely, *Sarcocystis* spp. Pigs can be infected when consuming food contaminated with fecal material of carnivores containing the sporocysts of *Sarcocystis* spp. The whitish filamentous, spindle-shaped, rice-grain-like, macrocyst-forming sarcocyst has been observed in the muscles of pigs, mainly in the heart, tongue and diaphragm (Zainalabidin, et al., 2017). The aim of this study was to validate the macroscopic diagnosis of these lesions detected by veterinary inspection service using histopathology analysis.

Material and Methods

From May 2017 to May 2018 was performed a prospective study with the collaboration of federal meat inspectors, which were asked to collect all lesions suspected of cysticercosis, hydatidosis and sarcosporidiosis found during routine of meat inspection. These samples were sent to animal pathology laboratory of Embrapa Swine and Poultry Research Center. It was analyzed a total of 361 samples, 296 were muscle samples suspected of sarcosporidiosis, 64 cystic livers suspected of hydatidosis and 1 heart sample suspected of cysticercosis. The tissue samples were collected in 10% buffered formalin and sent to the laboratory for processing by the routine histopathology technique.

Results

In 34 (53.1%) liver samples, *Cysticercus tenuicollis*, the larval form of *Taenia hydatigena*, was identified. The macroscopic characteristics of these lesions were single or multiple cysts, colorless fluid, thin membrane and a cephalic invagination corresponding to the scolex (Figure 1A). In the histopathology analysis it was observed that the cysts have a membrane that invaginates in only one scolex (Figure 1B), which has suckers and many hooks. In the other 30 liver samples, there were no parasites inside the cysts and it was not possible to identify the cause of the lesions. *Echinococcus spp.* was not identified. No sarcosporidiosis suspect lesion was found in the finishing pigs. All muscle samples analyzed were from culling sows. In 163 (55%) of these samples, granulomatous myositis (Figure 1C) compatible with *Sarcosporidium* spp. infection was observed. Intact sarcocysts were also observed in some of these samples (Figure 1D). No parasitic lesion was identified in the remaining 45% of the samples. Histopathology was not conclusive in the heart sample suspected of *Cysticerccus* spp. infection. The histologic lesion consisted of a circumscribed area of granulomatous inflammation on the surface of the myocardium.

Discussion and Conclusion

The reports of Brazilian Federal Meat Inspection System in swine slaughterhouses (Coldebella et al., 2017), have shown results of carcass condemnation and trimming data on more than 97 million pigs slaughtered between 2012 and 2014.The zoonosis injuries condemnations/trimming were reported in very low frequency. Among the total of organs and carcass inspected cysticercosis was registered in 0.00092%, sarcosporidiosis in 0.00051% of the cases.

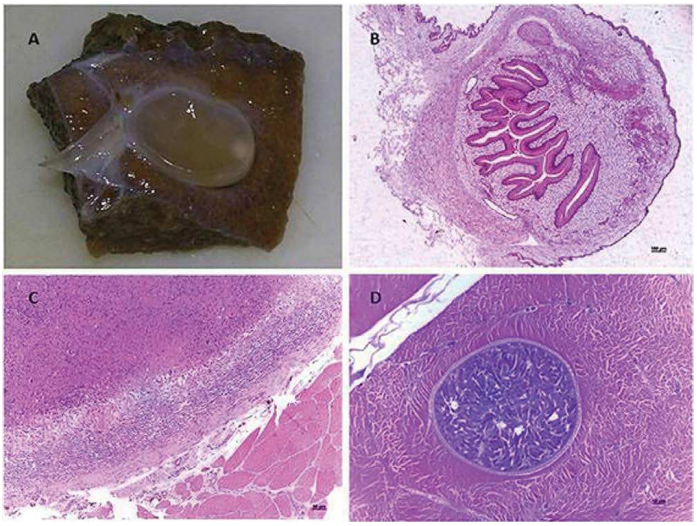

Photo 1: A- C. tenuicollis/liver; B- C. tenuicollis scolex; C- myositis/Sarcocystis; D- sarcocyst/tongue

The hydatidosis frequency was not noteworthy. The results show that most of cystic livers found in finisher pigs was related with *Cysticercus tenuicollis* infection, a non-zoonotic parasite. Pigs can be intermediate hosts of *Taenia hydatigena* (Monteiro et al., 2015). Pigs can be infected by coming in contact with feces of canids or felines contaminated with the infecting eggs (Rojas et al, 2018). Even though this parasite is not a threat for consumers, it is a critical indicator of biosecurity failure in pig farms. This information should be provided to field professionals to improve farm biosecurity procedures.

Sarcosporidiosis was not identified in finishing pigs, but was a prevalent infection in culling sows, probably due to the longer life cycle of these animals. The results show the importance of the carcasses inspection in culling sows, owing to the zoonotic potential of the disease.

Cysticercosis seems not to be a problem in Brazilian swine industry, since just one suspect lesion was detected in about 37 million slaughtered pigs. All these results are useful for meat inspection modernization based on risk analysis.

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Colostrum supply of suckling piglets and Salmonella seroprevalence in piglet rearing - Is there an relationship?

Schulte zu Sundern A.[1], Holling C.[2], Rohn K.[3], Schulte-Wuelwer J.[4], Deermann A.[4], Visscher C.[1]

[1]University of Veterinary Medicine Hannover, Institute for Animal Nutrition, Hannover, Germany, [2]Chamber of Agriculture Lower Saxony, Swine Health Service, Oldenburg, Germany, [3]University of Veterinary Medicine Hannover, Institute for Biometry, Epidemiology and Information Processing (IBEI), Hannover, Germany, [4]EVH Select GmbH, Meppen, Germany

Introduction

Salmonella are still a problem in pork production. Increasing litter sizes and more newborn piglets with low birth weights at the same time make an adequate colostrum supply more difficult. This study investigated the hypothesis, that modern piglet producing farms with a high farrowing rate and an increased *Salmonella* prevalence in piglet rearing show a more unfavourable colostrum supply in suckling piglets.

Methods

An association of 250 northern German piglet producing farms has been organizing a voluntary biannual health-status-monitoring on piglets (25 kg BW) since years. The monitoring includes an ELISA for *Salmonella* antibodies. On basis of these data 12 *Salmonella*-conspicuous and 12 *Salmonella*-inconspicuous farms were selected. These were similar in terms of hygiene, herd size and performance. Each farm was visited once 24-48 hours after the main farrowing day. On each farm 4 litters were sampled and 2 light-weight, 2 medium-weight and 2 heavy-weight piglets per litter were weighed and a blood sample was taken. The blood samples were tested for the colostrum supply by means of the Ig-Immunocrit-method. Furthermore, *Salmonella* optical density (OD)-values were tested by Herdcheck® *Salmonella* ELISA (IDEXX Laboratories, Hoofddorp, The Netherlands). Differences between both groups depending on body weight were statistically analysed by using the t-test (level of significance: $p < 0.05$).

Results

This study provides preliminary evidence that when comparing *Salmonella*-conspicuous farms and *Salmonella*-inconspicuous farms, colostrum supply could be a critical factor to be considered. The fact that there was no difference in the body weight of piglets in both groups suggests that there may be differences in colostrum management. Further studies have to investigate the reasons for the differences in the colostrum supply of light weigh piglets and the impact on the *Salmonella* seroprevalence at the time of slaughter.

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Table 1:

		body weight [kg]		immunocrit		*Salmonella* - OD	
		Salmonella-inconspicuous farms	*Salmonella*-conspicuous farms	*Salmonella*-inconspicuous farms	*Salmonella*-conspicuous farms	*Salmonella*-inconspicuous farms	*Salmonella*-conspicuous farms
BW category	n	88	96	88	96	88	96
light		1.05 (±0.25)	1.05 (±0.29)	0.100[a] (±0.04)	0.087[b] (±0.04)	35.85 (± 38.66)	36.18 (± 39.31)
medium		1.38 (±0.25)	1.36 (±0.27)	0.107 (±0.03)	0.098 (±0.03)	38.71 (± 40.12)	37.59 (± 37.51)
heavy		1.69 (±0.27)	1.78 (±0.31)	0.114 (±0.03)	0.111 (±0.03)	43.65 (± 41.88)	41.77 (± 38.55)

[a, b] averages differ significantly within a row ($p < 0.05$)