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PREVALENCE OF GASTRO-INTESTINAL PARASITES IN PIGS (*SUS SCROFA*) OF MUMBAI REGION

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Abstract: A study was carried out to determine the prevalence of gastrointestinal parasites in feral as well as domesticated pigs of Mumbai region. To conduct the survey, faecal samples were randomly collected from those pigs slaughtered at a pioneer pig slaughter house (Deonar abattoir, Mumbai) from November, 2013 to February, 2014. The samples were subjected to parasitological examination in Bombay Veterinary College (BVC) to identify varied parasitic stages present in faeces. Data generated showed the prevalence of six parasites species namely, *Ascaris suum* (32.59%), *Balantidium coli* (31.85%), *Trichuris suis* (11.11%), *Isospora suis* (1.48%), *Strongyloides ransomi* (0.74%), and *Globocephalus urosubulatus* (0.74%). Further, 56.71% male pigs and 45.58% female pigs were found to be infected with one or the other endoparasite revealing high prevalence of parasitic problem in and around Mumbai region. This study will help in development and implementation of preventive and control measures to reduce the economic loss due to curable parasitic diseases and to enhance the quality of pork for general public.

Keywords: Pig, GI parasites, Mumbai.

Introduction

Pigs, also called as swine / hogs are even toed ungulates of Genus *Sus* under family *Suidae*, which have been domesticated as a course of food, leather and similar products since ancient times and are known to harbour a range of parasites that can be transmitted to humans. Bulk of literature is available which focuses upon cysticercosis and taeniasis of porcine origin, but very little attention has drawn upon gastrointestinal parasites in swine in Indian condition. The predominant epidemiological factor associated with gastro-Intestinal parasitism (GIP) in pigs is the kind of farming system (Nansen and Roepstorff, 1999). In developing countries like India, majority of pigs are raised under free ranging system where they feed upon raw garbage, kitchen waste and faecal matter, therefore, more prone to parasitic infections (Weka & Ikeh, 2009; Tiwari *et al*., 2009). In comparison to China, USA and Germany, where average weight of pig carcass is 76kg, 84kg and 90kgs respectively, in

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India it lies around 35kgs as a whole (ICAR Handbook of Animal Husbandry, 2012). The huge difference indicates the unthriftiness and malnutrition in Indian pigs, of which high parasitic load is a leading cause of poor weight gain (Yadav and Tandon 1989; Ebibeni *et al*., 2013). Secondly, 90% of the pig population in India are localised in rural areas, where, swine domestication is mainly concentrated to low income group families having poor hygiene standards (Laha *et al*., 2014; NABARD). Even though, government has introduced several incentives to promote pig rearing but piggery sector often suffers from severe setbacks due to lacunae in the availability of data, policy development and implementations. In the light of above research gaps, the present study is carried out to generate data on prevalence of GIP in pigs of Mumbai region.

Materials and Methods

Collection and preservation of fecal sample: A sum total of 135 faecal samples were collected from pigs slaughtered at Deonar Abattoir, Mumbai for a time span of four months ranging from November, 2013 to February, 2014. The collected samples were mixed with 4 part 10% formalin and stored at 4^0C in laboratory facilities provided by Department of Bombay Veterinary College (BVC), Mumbai.

Parasitological examination: All the faecal samples so collected were processed using standard sedimentation and flotation techniques as described by Soulsby (1982) followed by microscopic examination for the presence of helminth ova and protozoan cyst/oocysts.

Results and Discussion

Out of 135 pigs investigated for intestinal parasites, 69 were found to be infected with an overall prevalence of 51.11%. On parasitological examination pigs were found to be harbouring 6 different parasites which included two protozoan and four nematodes. With respect to species-wise prevalence **(Table 1)**, *Asacaris suum* (32.59%) was found to be the most prevalent parasite followed by *Balantidium coli* (31.85%), *Trichuris suis* (11.11%), *Isospora suis* (1.48%) and least prevalence of about 0.74% was noted for *Strongyloides ransomi* and *Globocephalus urosubulatus*. The data generated was analyzed for sex sorted prevalence and it was found that 56.71% boar and 45.58% sows were infected with parasitic infections **(Table 2)**.

Table 1: species wise prevalence of GI parasites in pigs of study area

Species of parasites	No. of infected	Percent (%)
Ascaris suum	44	32.59
Trichuris suis	15	11.11
Strongyloides ransomi	1	0.74
Isospora suis	2	1.48
Globocephalus urosubulatus	1	0.74
Balantidium coli	43	31.85
Mixed infection	11	8.14
Total	69	51.11%

Overall, *Ascaris suum* was found to be most prevalent parasite as earlier reported by various researchers in India (Kumari *et al*. 2002; Deka *et al*. 2005; Borthakur *et al*., 2007). However, certain reports from North-east India indicates, high prevalence of *Trichuris suis* in pigs. The presence of eggs of *Ascaris suum* is more significant in piglet of 3-6 month age because parasitic immunity developed after 4 month of age. A similar higher prevalence of A. suum in piglets below six month age was reported by Rajkhowa, 1996 and Borthakur *et al*., 2007. In addition, it was realised that saturated sodium chloride solution was not appropriate; rather zinc sulfate or magnesium sulfate should be preferred as floatation media for detection of *A. suum* infections because of high density of their fertile egg.

Table 2: Sex-wise distribution of GI parasites in pigs of study area

Sex	No. Of examined	No. Of infected	Percent infected (%)
Boar (Male)	67	38	56.71
Sows (Female)	68	31	45.58
Total	135	69	51.11

Prevalence of GI parasites in different sexes was found to be statistically non significant. This may be because both boars and sows feed voraciously on garbage and have equal opportunity of getting exposed to parasitic infections. Similar trend of non significant prevalence was evidenced by Dey *et al*. (2014) in pigs of Bangladesh.

The high prevalence of *Balantidium coli* in pigs in Mumbai region alarms its impact on surrounding human population due to its zoonotic importance (Schuster & Ramirez-Avila,

2008) and further investigation should be carried out in infant diarrhoeic cases and immuno-compromised individuals to determine the exact status of balantidiosis in humans.

Conclusion

Sows though considered more susceptible but in present study significant difference in prevalence has not been recorded in both the sexes, however, sows need imperative attention because piglets pick up infection mainly during suckling stage. This study will help in development and implementation of preventive and control measures to reduce the economic loss due to curable parasitic diseases and to enhance the quality of pork for general public.

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