A case report of an outbreak of coccidiosis in a pig farm at Abeokuta¹Abakpa, S.A.V., ²Takeet, M.I., ¹Talabi, A.O. and ¹Oyewusi, I.K.¹Department of Veterinary Medicine and Surgery, ²Department of Veterinary Microbiology and Parasitology, College of Veterinary Medicine, Federal University of Agriculture, Abeokuta.

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Abstract

An outbreak of coccidiosis was reported in a pig farm housing four boars, six sows, twenty one growers and eleven piglets. Eleven neonatal piglets in two litters of three and five days old were suspected to be involved. Three (27%) out of eleven piglets presented signs of profuse foul smelling diarrhoea and pyrexia, while there was haemorrhagic diarrhoea in one and mortality was 9%. A diagnosis of coccidiosis was made based on the clinical signs, post-mortem findings of ulceration and fibrinonecrotic enteritis and laboratory identification of 4,600 coccidial oocysts per gramme of faeces by Mc Master counting technique which were identified as *Isospora suis*. The two herds were treated with Tripple sulfa-Trim® in drinking water for three days. This medication was effective as the diarrhoea resolved within four days of its onset.

Key words: Coccidiosis, Diarrhoea, Neonatal piglets**Introduction**

Coccidiosis is a protozoan disease occurring universally and most commonly in animals housed or confined in small areas contaminated with oocysts. The prevalence may be higher when piglets and sows are raised in solid concrete floors compared to self-cleaning floors (Sayd and Kawazole, 1996). Piglets are often infected with these coccidia shortly after birth (Stuart and Lindsay, 1985). In a study in Adamawa State, Nigeria, a prevalence of 10.6% was reported in piglets (Tsunda *et al.*, 2013).

Coccidiosis is characterised by foul smelling watery or greasy diarrhoea which is yellowish to white in colour. Infected piglets may appear weak, dehydrated, pyrexia, undersized and show signs of vomiting (Tsunda *et al.*, 2013). Some piglets become damp with diarrhoeic faeces before death. Post mortem findings include milk curd in the stomach and fibrinonecrotic materials in the colon.

Histologic lesions include focal ulceration, villous atrophy, blunting of the villi and fibrinonecrotic enteritis with shizonts and merozoites in epithelial cells (Lindsay *et al.*, 1983).

Recovered piglets are highly resistant to reinfection (Radostits *et al.*, 2007). Sub-clinical infection results in poor development and reduced weight gain (Stuart and Lindsay, 1985). Coccidia are host-specific and cross immunity between the species do not occur. Eight species of *Eimeria* and one species of *Isospora* infect pigs (Kahn, 2005), namely *E. deblickei*, *E. perminuta*, *E. scabra*, *E. spinosa*, *E. cerdonie*, *E. neodeblickei*, *E. porci*, *E. suis* and *I. suis* (Soulsby, 1982). A number of reports have described the presence of coccidia in association with or causing diarrhoea in piglets (Lindsay *et al.*, 1983; Neistrath, 2002).

Prevalence and incidence of clinical disease are age and seasonally related. *Isospora suis* is prevalent in piglets while *Eimeria*

spp is prevalent in older pigs (Lindsay *et al.*, 1984; Radostits *et al.*, 2007). Prevalence of coccidiosis in piglets is highest between the age of five and fifteen days of age with peak occurring between seven and ten days of age, and most commonly during warm summer months when high temperature favour the sporulation of oocysts (Vitovec *et al.*, 1991; Kahn, 2005; Radostits *et al.*, 2007).

Morbidity rate in coccidiosis is very high, up to 80% while mortality rate may be as low as 20%. Stuart *et al.* (1982) recorded marked clinical effects of *Isospora suis* in one to three day old piglets as compared to piglets two weeks of age or older. Natural infections with *Isospora suis* in piglets of three days may occur in the field, but such information seems presently unavailable in Nigeria. This paper reports an outbreak of coccidiosis in two litters of eleven piglets of three and five days of age in a pig farm housing forty two animals.

Case Report

An outbreak of diarrhoea was reported in a pig farm in Abeokuta, Nigeria involving two litters of five and six piglets of three and five days old respectively. The farm has four boars, six sows, twenty one growers and eleven piglets, raised on solid concrete floor. History revealed that both litters were treated with iron dextran on the third day post farrowing. The pig pens were dirty, the feed was moist and unhygienically kept and there was no record of previous outbreak of coccidiosis on the farm.

Clinical examination revealed profuse foul smelling diarrhoea and pyrexia of 39.5°C - 40.2°C. One of the piglets had haemorrhagic diarrhoea while two others were vomiting in addition to diarrhoea and pyrexia. Morbidity was 100% while mortality was 9%.

Faecal and blood samples were collected for parasitological examination and

sections of the jejunum and ileum for histological examination. Simple flotation technique described by Henriksen and Christensen (1992) and Mc Master egg counting technique was used to assess the faecal samples. Blood samples (5ml) was collected and thin blood smear was prepared and stained with Giemsa stain to check for haemoparasites as described by Soulsby, (1982).

Results

Mc Master faecal egg counting technique revealed 4,600 coccidial oocysts per gramme of faeces, which were identified as oocysts of *Isospora suis*. However, no parasites were found in the blood samples. Post-mortem findings showed that the small intestine was inflated and haemorrhagic, with the presence of milk curds and fibrino-necrotic materials in the stomach and colon respectively. Histological examination of sections of the jejunum and ileum revealed focal ulceration, villous atrophy, and schizonts and merozoites in the epithelial cells.

Clinical Management

Triple Sulfa-Trim[®] (Machvet Pharm Ltd, Nigeria, containing Sulfadimidine sodium 110mg, sulfadiazine 110mg, sulfamethoxazole sodium 110mg, Vitamin K 2mg and Trimthoprin 40mg) was administered in drinking water at the dose of 400mg/kg body weight for three days in addition to feeding the piglets *ad lib* with creep feed. This resulted in remarkable recovery within four days of the commencement of therapy. The feeding troughs and drinking containers were raised above the floor to avoid faecal contamination, while the pens were thoroughly washed and disinfected with chlorhexidine to reduce the number of oocysts.

Discussion and Conclusion

Coccidiosis occurs commonly in young

Figure 1: Piglet vomiting

Figure 2: Piglet showing sign of diarrhoea

animals and it is a major cause of diarrhoea in piglets in swine herds. *Isospora suis* is a common parasite on pig farms worldwide (Lindsay *et al.*, 1983) which may be found in 90% of herds and from 25% to 50% of litter (Radostits *et al.*, 2007). Many authors (Vitovec *et al.*, 1991; Kahn, 2005; Radostits *et al.*, 2007) have reported high prevalence and severe outbreaks in piglets between five and fifteen days of age. Stuart *et al.* (1982), recorded marked clinical effects of *Isospora suis* in piglets of one to three days of age as compared with piglets of two weeks of age or older.

Reports of clinical coccidiosis in piglets of three days and below is not available in Nigeria. In this report, the outbreak was recorded in two herds of three and five days of age. The outbreak in the piglet herd of 3 days old in this report is in agreement with the report of Stuart *et al.* (1982), but at variance with that of Vitovec *et al.* (1991). These differences may be associated with the differences in the age of the piglets.

Sows do not play significant roles in the transmission of *Isospora suis* from one generation of piglets to the next through

contamination of farrowing pen. Infection level as low as 100 sporulated oocysts can result in oocysts per gramme value of 100,000 and induce clinical signs of coccidiosis within two weeks of infection (Radostits *et al.*, 2007). Overcrowding and poor hygiene which result in the contamination of the feed and drinking water of the pigs can promote the faecal-oral route cycle of infection (Radostits *et al.*, 2007). In this case, the brewer offal used with concentrate as feed for the pigs was constantly kept moist and were fed to the pigs on the floor. This could have contributed to the outbreak.

Most of the recommended chemotherapeutic agents have effect on the early, first-stage schizonts and hence, used for control. Sulphadimidine is a good option for the control of coccidiosis in piglets. Amprolium and monensin used in prevention of experimental coccidiosis in piglets were ineffective (Kahn, 2005; Radostits *et al.*, 2007). A single oral dose of 1.0ml Toltrazuril given to piglets three to six days of age will reduce the occurrence of coccidiosis from 71% to 22% (Driesen *et al.*).

al., 1995). In this outbreak, Triple sulfa-Trim[®] was administered in drinking water for three days and remarkable recovery was observed within four days of commencement. This report shows the occurrence of clinical coccidiosis in piglets of three and five days of age and the successful management of the outbreak using sulphonamide Polytherapy for four days.

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