INVESTIGATION ON LONG ACTING OXYTETRACYCLINE FOR CONTROL OF MMA SYNDROME IN SOWS AND NEONATAL DISEASE IN PIGS

Peerasak Chantaraprateep[1)] Prasert Prateep[1)] Kumpee Korthirakul[2)]

1) Department of Obstetrics, Gynaecology and Reproduction, Faculty of Veterinary Science, Chulalongkorn University, Bangkok Metropolis 10500

2) Department of Medicine, Faculty of Veterinary Science, Chulalongkorn University, Bangkok Metropolis 10500

Abstract

Efficacy of long acting oxytetracycline for control of MMA syndrome in sows and neonatal disease in pigs was investigated using Large White, Landrace, Duroc, as well as crossbred sows totally 80. Forty (40) sows on every second for farrowing were randomized, selected and treated with long acting oxytetracycline on the day of parturition while another 40 sows served as control. Incidence of MMA syndrome in treated sows was much lower than those in the control. Piglet scours during the first 2 days of life was significantly higher ($P < 0.01$) in the control than in the treated group. Other traits studied as incidence of piglet mortality during the first 21 days was similar as well as litter performance and causes of piglet mortality.

The results indicated long acting oxytetracyline injectable solution was effective in controlling MMA syndrome in sows and scours in piglets following at farrowing or as soon as possible post farrowing I/M injection at 20 ml/sow and 1 ml (20 mg) /kg for piglets.

Introduction

Metritis, mastitis and agalactia (MMA syndrome) and neonatal disease in pigs commonly occur in most of the piggeries despite the intensive farming. It is generally accepted that 3 factors are involved in MMA syndrome, namely, stress during pregnancy and parturition, imbalance of hormones, and infection. Our recent report (Chantaraprateep *et al.*, 1983) demonstrated that in a commercial piggery where sows were fed with medicated feed, MMA syndrome was encountered up to 10%.

Neonatal diarrhoea of the pigs during the first week of life is one of the major threats in pre-weaning pigs unless prevention programme and monagement are improved.

Oxytetracycline with long acting was demonstrated (Cornwell, 1980) to be effective for 96 hours post treatment. This perspective might be very much useful for prevention of MMA syndrome in sows and subsequently scouring in neonatal pigs.

The present investigation was aimed to determine the efficacy of oxytetracycline with long acting property in preventing MMA syndrome in sows and scours in piglets using a single treatment at farrowing or as soon as possible post farrowing.

Materials and Methods

Materials

Animals : A commercial piggery, Sithipisal Farm, at Nakhorn Pathom with a previous history of MMA syndrome in sows and scours in piglets was selected for the experiment. Eighty (80) out of 350 sows were consisted of Large White, Landrace, Duroc and crossbreds.

Products : Long acting oxytetracycline,[1] Pfizer International Corporation (S.A.), Thailand. It contains 200 mg oxytetracycline per ml. Lot number 2-018-2.

[1] Terramycin (R) /LA

Methods

Routinely all the sows were housed in concrete slatted floor pens till about 1 week prior to estimated farrowing date, when they were transferred to individual farrowing pens. Feeding of all sows at 1 week prior to and 1 week post farrowing was not medicated. Each randomized treated sow received one treatment of long acting oxytetracycline at a unique dose of 20 ml per sow at 2 injection sites on the day of parturition. Every second sow to come in for farrowing was left untreated as a control. Forty (40) sows were treated and another 40 sows were left untreated over 73 days duration of the experiment (20 th October 1982 to lst January 1983).

Incidence of symptoms of MMA in sows was recorded during the first week post farrowing while for scouring of piglets daily observation for 21 days of life was conducted. Individual body weight of piglets at 3 rd and 21 st day as well as the number was also recorded.

Design of the experiment is summarized below :

Treatment	Route administration	Day med.	No. of sows
Untreated control	--	--	40
Long acting oxytetracycline 20 ml/sow	I/M	1*	40

* Treatment with divided dose injected into 2 sites and to be initiated at farrowing or as soon as possible post farrowing.

For both groups sows were fed with non-medicated feed. Statistical analysis was carried out by students' t' test (Snedecor and Colchran, 1980).

Results

The studied results were summarized by tabulation.

Table 1 : Incidence of Mastits, Metritis, Agalactia and Piglet Scours following treatment with long acting oxytetracycline injectable solution at farrowing or as soon as possible post farrowing compared with untreated controls.

Trait	Untreated control	long acting oxytetracycline Injectable solution 20 ml/sow
Incidence of :		
Mastitis	5 (12.5%)^{a}	nil (0%)^{b}
Metritis	10 (25%)^{c}	2 (5%)^{d}
Agalactia	5 (12.5%)^{a}	1 (2.5%)^{b}
Incidence of scours :		
Piglets Day 1	14^{a}	nil^{b}
Piglets Day 2	29^{a}	2^{b}
Piglets Day 3	47^{e}	46^{e}
Piglets Day 4 to 7	103^{e}	80^{e}
Piglets Day 8 to 21	647^{e}	401^{e}
TOTAL	840	529

For each trait between the 2 groups studied :

a and b are significantly different $(P < 0.01)$

c and d are significantly different $(P < 0.05)$

e non significant $(P > 0.05)$

Table 2 : Incidence of piglet mortality Days 1–3 and 4–21

	Untreated control	Long acting oxytetracycline injectable solution 20 ml/sow
Days	No. piglet mortality	No. piglet mortality
1–3	7[a]	7[a]
4–21	37[a]	36[a]
TOTAL	44[a]	43[a]

[a] non significnat $(P > 0.05)$

Table 3 : Summary of litter performance

	Untreated control	Long acting oxytetracycline treated
No. of sows	40	40
Piglets born alive	408	406
No. of piglets at 3 days	392	387
Av. body weight at 3 days (kg)	1.5 ± 0.3[a]	1.5 ± 0.2[a]
No. of piglets at 21 days	352	348
Av. piglet at 21 days	8.8 ± 2.2[a]	8.7 ± 2.0[a]
Av. bady weight at 22 days	3.9 ± 0.8[a]	4.0 ± 0.7[a]

[a] non significant $(P > 0.05)$

Table 4 : Causes of piglet mortality accounted by P.M. examination

	Untreated control	Long acting oxytetracycline injectable solution 20 ml/sow
Laid on	1	2
Arthritis	2	2
Pneumonia	4	4
Pneumonia and septicemia	3	1
Enteritis and septicemia	8	15
Haemolytic *E. coli*	nil	1
Abscess	1	nil
Gingivitis	3	4
Unidentified	2	2
TOTAL	24	31

For both groups, each trait studied was not significantly different $(P > 0.05)$

Table 5 : Bacterial culture from rectal swab of scouring piglets, Sensitivity test, Days of infection, Colour of faeces

	Results			
Bacterial culture from rectal swab	No. litter	Pure *E. coli*	*E. coli* + *Proteus sp.*	*E. coli* + small contaminants
Untreated control	22	13	2	7
Long acting oxytetracycline	20	15	2	3

	Positive results					
Sensitivity test	No. litter	Genta	Chloram	Kana	Erythro	Oxytetra
Untreated control	12	12	4	1	1	0
Long acting oxytetracycline	16	16	9	7	1	0

Days of infection and collection of specimen	No. litter	0–5D	6–11D	12–21D
Untreated control	18	2	5	11
Long rcting oxytetracycline	19	–	3	16

Colour of diarrhoea	No. litter	White	Yellowish–White	Yellow
Untreated control	11	2	6	3
Long acting oxytetracycline	13	3	4	2

For both groups, each trait studied was not significantly different $(P > 0.05)$

Discussions

As shown in Table 1, the incidence of MMA syndrome in untreated control was significantly higher $(P < 0.01)$ than those in the long acting oxytetracycline treated group for mastitis and agalactia, and $(P < 0.05)$ for metritis.

Three (7.5%) out of 40 treated sows showed symptoms related to the MMA syndrome while 10 (25%) out of 40 sows showed symptoms in untreated group.

It was also obvious from Table 1 that the incidence of piglet scours on Days 1 and 2 determined was also higher $(P < 0.01)$ in the untreated control group than those in the long acting oxytetracycline treated group.

The incidence of piglet scours was less in litters from treated sows, but the condition was not completely prevented by the treatment. It is possible that this was due to the presence of resistant organisms such as *E. coli*. The incidence of piglet mortality Days 1–3 and 4–21 was similar in both treated and untreated groups, as depicted in Table 2.

There was no significant difference of the litter performance between the 2 groups studied $(P > 0.05)$ as shown in Table 3.

The incidence of piglet mortality due to enteritis and septicemia was higher as shown in Table 4 because of mild TGE problem in this piggery and vaccination programme was not carried out in the proper programme.

Haemolytic *E. coli* organism isolated from the piglets affected with scours in this investigation was not sensitive to Terramycin.

In this piggery assist of farrowing by traction of the piglet per vagina is practised.

Average ambient temperature in Nakhorn Pathom during the period studied was around $29^{\circ}-30^{\circ}$ C.

Conclusion

Long acting oxytetracycline injectable solution was effective in controlling MMA syndrome and scours in piglets following at farrowing or as soon as possible post farrowing I/M injection at 20 ml/sow and 20 mg/kg for piglets.

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