MASTITIS-METRITIS-AGALACTIA (MMA) IN THE SOW: A FIELD SURVEY OF MMA AND OTHER FARROWING DISORDERS UNDER DIFFERENT GESTATION AND FARROWING HOUSING CONDITIONS

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In 1972 a survey in Illinois indicated severe problems of lactation failures including MMA contributing to about 50% of the total piglet mortality (1). Recently a field survey of 88 farms in Illinois indicated less severe problems with the disease syndrome (2). 1% of the herds reported significant problems of MMA in all farrowings, 6% had problems in about 50% of the farrowings, 54% of the herds reported only occasional cases, and 38% had no problems at all.

In 1981 a more detailed field investigation of MMA and other farrowing disorders was carried out throughout the calendar year in four areas of western Illinois. 28 farrow-to-finish farms were selected representing current production systems in the US Midwest including six different combinations of gestation and farrowing housing methods (Pasture-Pen-Crate-Stall) (table 1). Feeding and medication routines at farrowing were recorded as well as heating, flooring, and other pen environmental factors of interest. The recordings were done by the herd managers under supervision of the herd veterinary practitioners (Drs. Connors, Carthage; Price, Petersburg; and Larson, Alpha).

RESULTS:

Table 1. Housing system during gestation and farrowing, sows and farrowings recorded.

	Gestation,	Farrowing,	#Herds,	#Sows/Herd,	#Farrow. rec.
I.	Pasture	Pasture	3	220	604
II.	Pasture	Pen	3	195	524
III.	Pen	Pen	1	350	707
IV.	Pasture	Crate	7	156	1435
V.	Pen	Crate	12	118	8100
VI.	Stall	Crate	5	509	4924
		$\bar{x}$	28	345	16295

Table 2. Prophylactic MMA medication routines in % of herds investigated (in 22 herds).

	Medication,	% of farms
Sows;	Milk vaccine	50.0 %
	Laxatives	31.8
	Oxytocin	27.3
	Antibiotics or chemotherapy	40.1
Piglets;	Antibiotics	54.5

Table 3. Clinical signs of disease recorded during the periparturient period, % of all farrowings recorded; Dystocia (Dyst.), Anorexia (Anor.), Depression (Depr.), Dysgalactia (Agal.), Fever (Fev.), Mastitis (Mast.), and Vaginal discharge (Disch.).

	Dyst.,	Anor.,	Depr.,	Agal.,	Fev.,	Mast.,	Disch.
I.	2.2	5.1	5.0	3.3	2.8	3.3	6.3
II.	1.1	3.6	4.6	2.9	2.3	3.1	3.1
III.	0.7	9.5	9.5	9.5	9.5	9.5	9.5
IV.	10.9	16.5	14.4	12.7	12.2	11.4	64.4
V.	3.4	7.3	6.9	8.0	7.7	5.9	14.6
VI.	3.2	3.6	3.8	4.0	3.8	3.5	18.2
$\bar{x}$	3.7	6.9	6.6	6.8	6.6	5.3	19.3

Table 4. Farrowing results; Litter size, Mortality; (A) # piglets/litter total born; (B) # piglets/litter born alive; (C) Mummified fetuses, % of total born; (D) Other stillbirths and found dead; (E) Total mortality, % of total born; (F) # piglets/litter alive at 1 week of age.

	A	B	C	D	E	F
I.	10.2#	9.2#	0.6%	9.1%	28.8%	7.3#
II.	10.6	9.6	0.7	9.6	22.4	8.3
III.	11.2	10.5	0.7	5.8	23.5	8.6
IV.	11.9	10.4	2.0	10.7	32.8	8.0
V.	10.7	9.3	0.9	14.0	29.8	7.5
VI.	11.8	10.6	0.7	10.0	37.9	7.4
$\bar{x}$	11.2	9.9	0.8	10.8	32.1	7.6

Table 5. Seasonal variation of MMA in 22 herds.

Quarter	I	II	III	IV
# farrowings recorded	3890	3792	3537	3577
% MMA	6.9	7.9	9.9	6.0

Table 6. Farrowing results and MMA in primiparous and multiparous sows (13 herds).

	Primiparous	Multiparous
# farrowings recorded	7202	4654
% dystocia	4.0	4.5
" dysgalactia-agalactia	4.3	11.3
" fever	3.6	9.8
" mastitis	3.2	9.5
" vaginal discharge	11.6	22.4
Piglets; # total born/litter	9.8	10.4
% mummified fetuses	0.6	1.3
% other stillb.& found dead	3.6	10.6
% total mortality	27.6	23.0
# alive/litter at 1 week	7.1	8.0

Table 7. Farrowing results in multiparous healthy and MMA affected sows (in 10 herds).

	Healthy sows	MMA sows
# farrowings	1774	239
% dystocia	0.9	8.4
Piglets; # total born/litter	11.3	12.0
% mummified fetuses	0.7	1.7
% other stillb. & found dead	5.1	8.8
% total mortality	17.2	55.8
# alive/litter at 1 week of age	9.3	5.3

The results comprise 16,295 farrowings in the 28 herds investigated. Three farms used two different housing systems simultaneously, thus, the number of comparison groups totalled 31. The breeding method was closely related to housing system. Hand-breeding was predominantly practiced in the housing systems III-VI which might explain the high total number of piglets born in several of these herds (table 4).

The incidence of farrowing disorders including MMA with the typical symptoms of anorexia, depression, agalactia or dysgalactia, fever, udder swelling, and vaginal discharge is displayed in table 3. The average incidence of agalactia-dysgalactia was 6.8% which is low in comparison to earlier investigations, however, a large number of farms used medications extensively to control the disease syndrome (table 2).

Housing method IV presented a high incidence of dystocia and other farrowing disorders (table 3). A high incidence of MMA was also found in group V indicating a negative influence of an abrupt change of the environment from pasture or pens to farrowing crates a few days prior to farrowing. A Klebsiella infection related to woodshavings used as bedding material contributed to the high incidence of MMA in the herd of group III. Low incidences of most of the periparturient disorders were recorded for the groups I, II, and VI. Sows in farrowing crates, thus, did not develop any significant adverse clinical reactions (except for a higher incidence of vaginal discharge) when they were used to individual stalls during the gestation period, however, the total piglet mortality was higher in the crated sows (table 4).

MMA was influenced by season with a peak incidence of 9.9% in the third quarter, and the lowest incidence, 6.0%, during the 4th quarter (table 5). Multiparous sows had a higher incidence of the disease than the primiparous gilts (table 6).

The piglet mortality was very high in MMA sows, 55.8%, in comparison to healthy sows, 17.2%. MMA sows gave birth to larger litters than healthy sows did, and MMA sows also demonstrated a high incidence of dystocia (including prolonged farrowings, weak labor, and fetus malpresentations) (table 7).

REFERENCES:

1. Leman, A.D., Knudsen, C., Rodeffer, H.E., and Mueller, A.G.: JAVMA, 1972, 161, 1248.

2. Winship, H., and Curtis S.E.: Personal communication 1981.