Torsion of Abdominal Organs in Sows: A Report of 36 Cases

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SUMMARY

Necropsy records of 36 sows with torsion of abdominal organs involving individually the stomach, the spleen, a liver lobe or the intestine were reviewed for the years 1970 to 1983, and the age, the clinical signs and the gross lesions were recorded. These acute abdominal accidents were characterized clinically by sudden death. Dry sows from large breeding units were affected. Twenty-six cases were diagnosed between January 1981 and December 1983 while only ten cases had been seen between 1970 and 1980. Gastric torsion was the most common condition (40% of the cases) and the other three conditions were equally represented (20% each). Management practises that could be responsible for the apparent increase in occurrence of this problem are discussed.

Key words: Sows, torsion, stomach, spleen, liver lobe, intestinal volvulus.

RÉSUMÉ

Rapport de 36 cas de torsion d'organes abdominaux, chez la truie

Ce travail consistait en une étude rétrospective des rapports de nécropsie de 36 truies qui souffraient d'une torsion de l'un ou l'autre des organes abdominaux suivants: estomac, rate, foie ou intestin. L'étude englobait la période de 1970 à 1983 et portait sur l'âge des truies affectées, les signes cliniques qu'elles manifestèrent et les lésions macroscopiques qu'elles présentaient. Ces accidents abdominaux aigus se caractérisaient cliniquement par des mortalités subites et ils impliquaient des truies taries provenant de grandes maternités modernes. Vingt-six cas survinrent entre janvier 1981 et décembre 1983, par rapport à seulement dix, de 1970 à 1980. La torsion gastrique comptait pour 40% des cas et, de ce fait, s'avéra la condition la plus fréquente; quant aux trois autres, elles se partagèrent également l'autre 60% des cas. Les auteurs commentent les méthodes d'élevage susceptibles d'être responsables de l'aggravation apparente du problème, au cours des dernières années.

Mots clés: truie, torsion, estomac, rate, lobe hépatique, volvulus intestinal.

INTRODUCTION

Since 1981, the staff at our diagnostic laboratory has noted an increase in the number of sudden deaths in sows caused by torsion of the stomach, the spleen, a liver lobe or the intestine. A retrospective study using necropsy records was conducted to obtain more information on this problem.

MATERIALS AND METHODS

The necropsy records of 36 sows with torsion of abdominal organs were reviewed for the years 1970 to 1983 inclusively. Available pertinent data such as the age, the clinical signs and the gross lesions were recorded.

RESULTS

Twenty-six cases were diagnosed between January 1981 and December 1983 inclusively while only ten cases had been seen between 1970 and 1980 (Figure 1). Dry sows from large, modern breeding units were affected. Gastric torsion was the most common con-

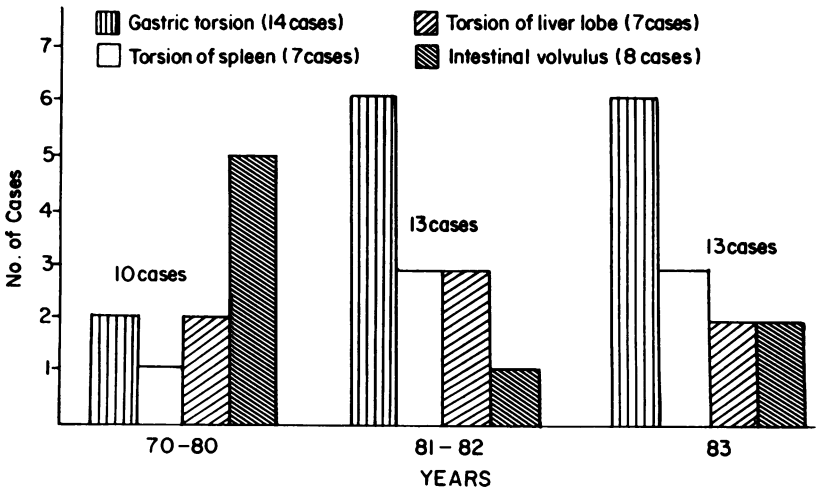

FIGURE 1. Occurrence of torsions of abdominal organs in sows according to the years.

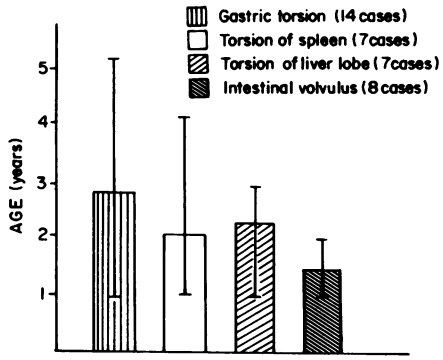

FIGURE 2. Age occurrence of torsions of abdominal organs in sows. Each bar represents the mean and the vertical line in the center of the bar represents the range.

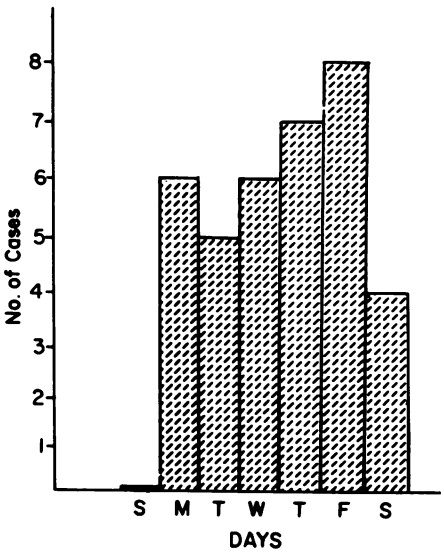

FIGURE 3. Daily occurrence of 36 cases of torsion of abdominal organs in sows.

dition (40% of the cases), and the other three conditions were equally represented at a rate of about 20% each. A combination of two or more of these conditions was not seen. Age and daily ocurrences of these conditions are shown in Figures 2 and 3. Sows with gastric torsion were one to five years old with a mean of about three years; age data were similar for sows with splenic and liver torsions. Intestinal volvulus however, occurred at a younger age with a mean of 1.4 year. There was not a significant daily prevalence for these accidents.

These acute abdominal accidents were characterized for the most part by sudden death, but in cases of gastric torsion, death was preceeded sometimes by a short period of anorexia, and signs such as distended abdomen, shortness of breath, cyanosis and excessive salivation.

Of the 14 sows with gastric torsion, 11 had clockwise torsions (180° in ten and 360° in the other) while three had counterclockwise torsions (180° in two and 360° in the other). These torsions were about the longitudinal axis of the organ with the cardia and pylorus as fixed points. The stomach was severely distended with large amounts of fluid, partly digested food and gas. The wall of the stomach was congested and hemoglobin imbibition was common. The spleen had rotated with the stomach in ten sows; the organ was then severely congested.

Of the seven sows that had torsion of the spleen only, five had torsion of the whole organ while two sows had torsion of its distal portion. Affected spleens were severely congested and five of them had ruptured causing hemoperitoneum.

Of the seven sows that had torsion of a liver lobe, four had a torsion of the left lateral lobe and three of the right lateral lobe. Affected lobes were severely congested and had ruptured at the twisting point, causing hemoperitoneum.

Intestinal volvulus observed in eight sows involved the following segments: entire small intestine (four sows), posterior half of small intestine (one sow), small intestine and colon (one sow), caecum and colon (one sow), and colon (one sow).

DISCUSSION

Results of our retrospective study show a significant increase in the number of diagnoses of torsions of abdominal organs in sows since 1981 and gastric torsion cases increased dramatically. We feel these laboratory diagnoses are a true reflection of an emerging problem and since detailed epidemiological studies were not attempted, definitive conclusions on the reasons for the increase are not possible. From limited clinical investigations, we believe that feeding of dry sows in large breeding units once in 24 or 48 hours might be an important provoking factor. This practice has become more and more popular in our area in recent years. Sows waiting to be fed may become very excited and some of them will ingurgitate large amounts of feed and water very rapidly. Most of our sows with gastric torsion had large amounts of gastric content composed of fluid and partly digested food. Blackburn *et al* (1) and Filipov (2) have also reported similar observations in cases of gastric torsion in sows. In our area, torsions of abdominal organs seem to occur randomly during the week except for Sunday. We do not know if the absence of cases on Sunday reflects a real decrease of the problem in the field or represents a laboratory artefact. Cedervall (3) did not find any evidence of intense movements as a provoking factor for gastric torsion in sows; he then suggested that pregnancy, colon constipation and excessive gastric content may play a role individually or in combination. Some of our gastric torsion cases occurred in sows fed twice daily; this observation suggests that other factors might be involved such as the type of housing, the mode of feeding, and the quality or the physical nature of the feed. Rough movements and manipulations of sows were incriminated in some of our cases. Gastric torsion in sows shares some similitudes with that occurring in large breeds of dogs. Acute gastric dilatation due to overeating and overdrinking seems to be an important prerequisite for the condition in those dogs (4).

Torsion of the spleen alone seems to occur in the adult pig because of a long and loose gastrosplenic ligament (5); death of these sows was attributed to sequestration of large amounts of blood in the spleen and/or to hemorrhage secondary to splenic rupture. Adult pigs seem also predisposed to torsion of a liver lobe because of three deep fissures forming four principal lobes; death of these sows was attributed to hemorrhage caused by rupture of the affected lobe. Volvulus of the small intestine and/or colon were also observed and the condition afflicted younger sows; this observation agrees with the fact that adolescent swine seem to be more susceptible to intestinal volvulus (5).

Torsions of abdominal organs must be considered in the differential diagnosis of sudden deaths in sows. Many of the case histories reviewed referred

to two to ten cases of sudden deaths in sows on the same farm over a period of a few weeks or a few months, and we are convinced that this problem is an important source of losses in some breeding units. We hope that the present report will stimulate more interest on this apparent man made disease of swine.

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BOOK REVIEW

Diagnostic Procedures in Veterinary Bacteriology and Mycology, Fourth Edition. Edited by G.R. Carter. Published by Charles C. Thomas, Springfield, Illinois. 1984. 515 pages.

This is a new edition of the familiar and useful manual which has become a standard bench reference for veterinary diagnostic laboratories. It retains the general format of previous editions. Emphasis is given to practical procedures for isolation and identification of bacterial and fungal pathogens, with a short discussion of each agent, and of the hosts and diseases with which it is associated. These provide a concise source of information about each agent that is not readily available elsewhere. Almost all the chapters have been revised and updated to incorporate recent advances and cover emerging pathogens. Several chapters, including those on non-sporing anaerobes, *Campylobacter, Brucella,* Enterobacteriaceae, and *Hemophilus* have been almost completely rewritten, and the chapter on susceptibility testing has been considerably expanded. A new chapter on diseases of fish has been added. Many of the diagnostic tables have been enlarged to include more recent, useful identification criteria.

Users who have grown to depend on previous editions will find the new edition is even more useful. However, it is well to be aware that it does contain some errors. For example, the table which compares characteristics of staphylococci and micrococci contains so many errors in its footnotes that it is unlikely to be very helpful in characterizing an isolate. Supplementary references for the chapter on *Clostridium* are misplaced, and will be found at the end of the chapter on *Micrococcus* and *Staphylococcus.*

Five chapters are devoted to Mycology. Together they form a good account of animal mycoses and the diagnostic procedures for identifying their etiologic agents, but this section is marred by a failure to keep up with modern taxonomic changes. The names of many fungi, particularly the Zygomycetes, are incorrectly cited, as are some of the diseases they cause. Phycomycosis, for example, is no longer relevant. No description is given of entomophthoramycosis, which is being increasingly reported. Chromomycosis is an ambiguous term encompassing two quite different diseases, chromoblastomycosis which appears to be confined to humans, and phaeohyphomycosis which also affects animals.

The book is well-illustrated and well-referenced. This new edition will continue to be an extremely useful source of information on diagnostic veterinary microbiology.

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