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FETAL ELECTROCARDIOGRAM IN DAIRY CATTLE

IV DIAGNOSTIC APPLICATION FOR FETAL MUMMIFICATION*1

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In previous papers of this series¹⁻³), the authors discussed some of the fundamental problems of fetal electrocardiograms (F-ECG), as well as diagnostic evaluation of F-ECG technique for single or twin pregnancy of 5 months onward in dairy cattle.

This report deals with a diagnostic application of F-ECG technique on two cases of bovine fetal mummification which is frequently encountered by veterinary practitioners.

DESCRIPTION

1) Control animal

As a control, one pregnant Holstein cow inseminated at the same day as case No. 1 was electrocardiographically examined at 243 days of pregnancy. The procedures of F-ECG recording were the same as those previously described by the authors²). But, in this study, only a bipolar lead between the right flank and the middle of the right side abdomen (lead 1-3) was used.

As shown in figure 1, an electrocardiogram from the control animal indicates two kinds of regular QRS spike rhythms which are depended upon fetal and maternal heart activities.

2) Case No. 1

A Holstein heifer, 2 years old, and the control animal, both inseminated on the same day, conceived on the same date. Rectal examination at 243 days of pregnancy revealed signs of fetal mummification. An F-ECG examination made the same day failed to show any evidence of fetal QRS (fig. 2). A diagnosis of fetal mummification was made. The animal received treatment for expulsion of the dead fetus; estrogens and oxytocin were administered for this purpose for 10 days. On the 13th day, a female mummified fetus was extracted from the uterus by hand. The fetus, 500 g in weight and 28 cm in crown-rump length, was approximately 5 months of age (fig. 4).

*1 This work was presented at the 116th Meeting of the Japan Veterinary Medical Association (Hokkaido) held on the 7th September 1965 in Sapporo.

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3) Case No. 2

This case was a 7-year-old Holstein cow. A rectal palpation performed at 228 days of pregnancy failed to give any signs of fetal life because of deep descent of the gravid uterus into the abdominal cavity. But, fetal mummification was suspected. An examination of F-ECG was undertaken at the same day. No fetal QRS was observed, whereas a maternal one was clear (fig. 3). An estriol preparation was intramuscularly injected for the purpose of expulsion of the fetus. A male mummified fetus, 500 g in weight and 27 cm in crown-rump length, was expelled into vagina 72 hours after treatment (fig. 5). This mummy was also approximately 5 months of age.

COMMENT

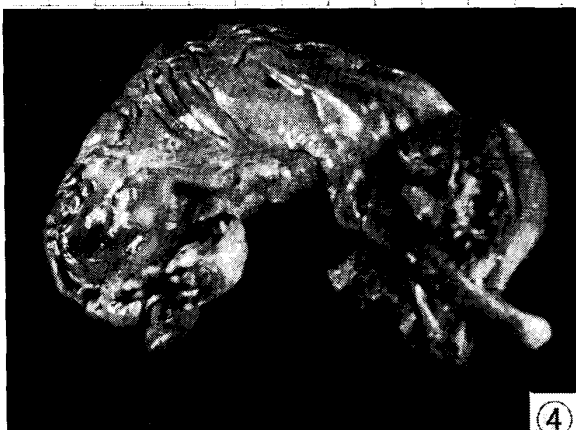
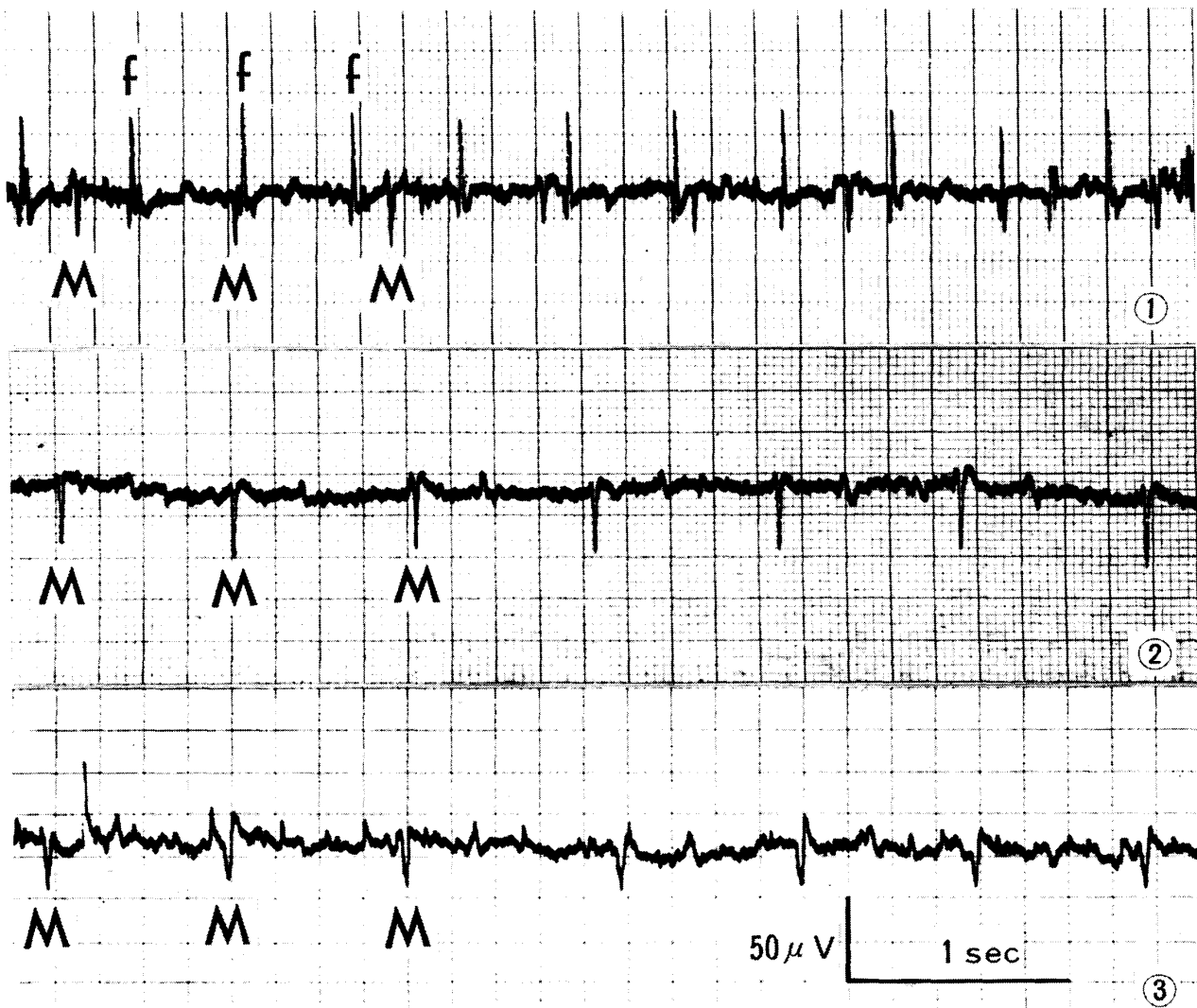
From the result of this study it was concluded, F-ECG technique may be applicable to decisive diagnosis of bovine fetal death from the middle of gestation onward, particularly in cases in which the gravid uterus can not be easily palpated by the routine rectal examination.

REFERENCES

- 1) KANAGAWA, H., TOO, K., KAWATA, K. & ONO, H. (1965): *Jap. J. vet. Res.*, **13**, 111
- 2) TOO, K., KANAGAWA, H. & KAWATA, K. (1965): *Ibid.*, **13**, 71
- 3) TOO, K., KANAGAWA, H. & KAWATA, K. (1966): *Ibid.*, **14**, 103

EXPLANATION OF PLATE

- Fig. 1 Normal electrocardiogram at 243rd day of gestation in control case
Fetal QRS spikes are indicated by signs of "f", and maternal ones by "M".
- Fig. 2 Electrocardiogram at 243rd day of gestation in case No. 1
No fetal spikes are seen in this tracing, whereas maternal QRS patterns
are clearly observed.
- Fig. 3 Electrocardiogram at 228th day of gestation in case No. 2
No fetal spikes are detected, although maternal ones are obvious.
- Fig. 4 Mummified fetus in case No. 1 (scale: cm)
- Fig. 5 Mummified fetus in case No. 2



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