Project of investigation on infertile dairy cattle at Dairy Farm Promotion Organization (DFPO), Muak-Lek*

2. Preliminary report on infertile dairy cattle used for induction of lactation.

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* Paper presented at the 22\textsuperscript{nd} Annual Conference, Kasetsart University, Veterinary Medicine Section, Bangkok, February 2-3, 1984.

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INTRODUCTION

Infertility is one of the great economic loss in dairy cattle farming. The causes of infertility are numerous and several factors are involved. They may be of congenital or acquired origin and temporary or permanent. The causes may be due to defects of the male or female as well as mismanagement at the breeding time. The present study is aimed to investigate the possible cause of infertility in the female at DFPO, Muak-Lek during the year 1983.

MATERIALS AND METHODS

Animals

A total of 21 infertile crossbred cattle, 11 heifers aged between 3 and 10 years (one of 3, four of between 3 and 5, four of between 6 and 9, and two of over 9 years old), and 10 cows aged between 5 and 10 years old were used (one of 5, three of between 6 and 9, and six of over 9 years old) for this investigation. They were classified as infertile animals with previous breeding records of more than 7 insemations without conceive. They were grouped together and subjected to hormonal induction of lactation (Leenanuraksa et al., 1984).

Methods

Examination per rectum of the genital organs and inspection of the cervix by endoscope were carried out monthly beginning from April 1983 for 6 and 3 times respectively (Chantaraprateep et al., 1983). One month after the experiment, animals which came in heat were inseminated and pregnancy diagnosis was performed systematically 2 months after the insemination. Animals which failed to conceive during May to October, 1983 were culled and slaughtered. Genital organs were collected and proceeded for further studies. Analysis of the findings were carried out at the end of the studied period.
RESULT

Of the total 21 animals, examination of the genital organ per rectum and endoscope revealed seven normal finding (2 cows and 5 heifers), six purulent vaginal discharge as shown in figure 1 (4 cows and 2 heifers), three cystic ovaries (2 cows and 1 heifer), two cystic corpora lutea (1 cow and 1 heifer), one luteal cyst, one mucometra, and one bilateral uterine hypoplasia.

Only 10 genital organs out of the total 21 cows were confirmed histopathologically. The findings are listed below.

1. Four normal animals revealed normal finding of the uterus with corpus lutea and growing follicles or ovulated follicle.

2. Two cases of purulent vaginal discharge, the findings revealed chronic endometritis with persistent corpus luteum as shown in figure 2, A and B.

3. A case of cystic corpus luteum showed follicular hyperplasia of endometrial layer and cystic formation in perimetrium layer of the uterus and cystic corpus luteum of the ovary (figure 3, A and B).

4. A case of mucometra, the findings revealed the present of mononuclear cells infiltrated in endometrial layer with moderate degree of edematous fluid in myometrium and desquamation of endometrial epithelium (figure 4).

5. A case of congenital anomalies of the genital organs of which total bilateral uterine hypoplasia was confirmed as shown in figure 5 A. Cord like structure uterus consists of fibrous tissue (figure 5 B) and stenosis of the lumen was observed.

6. A case of cystic ovary which revealed mild degree of muscular degeneration in myometrial layer with marked connective tissue migration in the uterus (figure 6) and cystic follicle on the ovary.

Figure 1. A cow with purulent vaginal discharge (arrow).
Figure 2A. Chronic endometritis (arrows).

Figure 2B.

Figure 3A. Follicular hyperplasia of endometrial layer and cystic formation in perimetrium layer of the uterus (arrows)

Figure 3B. Cystic corpus luteum of the ovary.
Figure 4. A case of mucometra with the presentation of mononuclear cells (arrow) infiltrated in endometrial layer and edema of myometrium.

Figure 5A. Congenital anomalies of the genital organ, a total bilateral uterine hypoplasia (arrows). U.B. = Urinary bladder.
Figure 5B. Cord-like structure uterus consists of fibrous tissue (arrows).

Figure 6. A case of cystic ovary cow with mild degree of muscular degeneration in myometrial layer with marked connective tissue migration in the uterus.
DISCUSSION

The histological findings in this investigation revealed that 60% of infertile cows examined (6/10) had anatomical defect, or hormonal disturbances, or pathological ailment, while the normal finding accounted to be 40% (4/10). The cows which were culled because of infertility in this organization was about 1 per cent and contributed from heifer and cow 52.4 and 47.6% respectively. The problem is rather low when compared with other reports which were more than 3.7 per cent in England (Leech et al. cited by Arthur, 1964), 5.2 per cent for Northern Ireland (Gracey cited by Arthur, 1964), and 6 per cent in U.S.A. (Trimberger and Davies cited by Robert, 1971). In order to rule out errors of management leading to lack of detection of oestrus which causes breeding inefficiency all the experimental animals were grouped together in individual stall. Hereditary or congenital anatomic defect of the reproductive tract as in this case was an absence of ovaries and uterus due to agenesis. There is no treatment, thus the animal should be promptly diagnosed and culled.

In case of mucometra in an heifer in this investigation, there was accumulation of viscid mucus about 15 liters in both horns of the uterus. Hysterectomy was attempted to treat the condition. Mucometra recurred later on with the development of ovarian cyst and endometrial hyperplasia proximal to an obstructed cervix. The uteri have thin atrophic walls. Such condition had been discussed by Jubb and Kennedy (1970) and Roberts (1971). Cow with mucometra due to defect of the genital tract is often sterile and should be promptly diagnosed and culled.

Cystic ovaries in dairy cattle is becoming one of the most common causes of infertility. They are characterized by follicular cysts or cystic degeneration of the Graffian follicle, luteal or luteinized cysts, and cystic corpora lutea. Follicular and luteal cysts are anovulatory cysts while cystic corpus luteum is an ovulatory cyst. The cause of both conditions is a failure of the hypophysis to release sufficient amount of luteinizing hormone to induce ovulation and proper development of the corpus luteum (Smith et al., 1972). Cystic corpus luteum contains a fluid filled central cavity (Jubb and Kennedy, 1970). It contains estrogen 2-3 times less than normal ovarian follicular fluid. It is believed that cystic ovaries is hereditary and increasing feeding high in protein stimulates lactation and development of cystic ovaries. Certain males transmit this hereditary cystic C.L., although not pathogenic but is a secondary manifestation of a basic hormonal dysfunction. About 20 to 30 per cent or more of cows with cystic ovaries if they conceive will develop cystic ovaries again at subsequent service periods (Roberts, 1971). The most constant and prominent sign of cystic ovaries is the relaxation of the sacro-sciatic ligament most noticeable at its caudal border because of the relaxing effect of estrogens on the pelvic ligaments. Although, treatment with prostaglandin F2α in the cases of luteal cyst and cystic corpus luteum were succeeded in induction of estrus but conception was not achieved.

Endometritis has a profound effect upon the fertility of the animal. The infection usually reach the uterus from the vagina at coitus, insemination or parturition or by the circulation. Brus (1954) found that 70% of repeat breeder or cyclic non-breeder cows had endometritis as determined by endometrial biopsy. Clinical signs of endometritis were the presence of a whitish green mucopurulent vaginal discharge. Attempts to treat endometritis with Lugol’s iodine had been made but conception was not achieved.
REFERENCES