

Prevalence, risk factors for and impact of subclinical endometritis in repeat breeder dairy cows

B. Salasel^{a,*}, A. Mokhtari^b, T. Taktaz^c

^a Department of Animal Clinical Sciences, Faculty of Veterinary Medicine, Karaj Azad University, Karaj, Iran

^b Department of Animal Clinical Sciences, Faculty of Veterinary Medicine, Shiraz University, Shiraz, Iran

^c Department of Animal Clinical Sciences, Faculty of Veterinary Medicine, Shahrekord Azad University, Shahrekord, Iran

Received 3 January 2010; received in revised form 12 May 2010; accepted 27 May 2010

Abstract

The aim of this study was to determine the prevalence and risk factors for subclinical endometritis (SE) and its effects on fertility in repeat breeder dairy cows. Dairy cows of parity 1 to 5 that were artificially inseminated (AI) 3 or more times (selected cows were artificially inseminated an average of 3.9 times) were examined at 190 ± 40 days in milk, and clinically normal cows ($n = 77$) were selected based on the absence of abnormal discharges on external inspection and the absence of abnormal findings on transrectal palpation and ultrasonographic examination. Endometrial samples were collected from the uterus by using the lavage technique in the luteal phase of the estrus cycle. Collected samples were centrifuged and a drop of sediment was streaked on to a clean microscopic slide and stained with Giemsa. The percentage of polymorphonuclear cells (neutrophils) was counted for each specimen. The analysed data showed that the average amount of neutrophils was 3.1% (0–9) in the selected cows. Abnormal calving (dystocia, twin births, and abortion), retained placenta, and postpartum uterine infections were associated with an increase in prevalence of SE. Subsequently, SE was significantly associated with a decrease in conception rate in the next AI. Conception rate in the next AI was 5% for cows ($n = 38$) with SE ($\geq 3\%$ neutrophil), and 47% for cows ($n = 34$) without SE ($< 3\%$ neutrophil) ($P = 0.001$). The prevalence of cytologically diagnosed SE ($\geq 3\%$ neutrophil) was 52.7% ($n = 38$). In conclusion, abnormal calving, retained placenta, and postpartum uterine infections may be associated with an increase in prevalence of SE and subsequently, SE may decrease reproductive performance and increase the incidence of repeat breeder syndrome.

© 2010 Elsevier Inc. All rights reserved.

Keywords: Subclinical endometritis; Endometrial cytology; Conception rate; Repeat breeder

1. Introduction

Worldwide, calving rates to first service are reported to have declined from 60% to 30–40% over the past 25 years [1]. Repeat breeding is one of the major problems affecting reproductive efficiency. The repeat breeder syndrome is a major source of economic waste and

poor reproductive performance in dairy herds [2,3]. The syndrome contributes to lower dairy profit via wasting semen and insemination costs, increasing intervals to conception, increasing culling and replacement costs, losing genetic gain through increased generation intervals [2], and reducing fertility [4]. The incidence of repeat breeding is in the range of 10.1–24% [2,3,5]. Increased milk production has been associated with reduced fertility [6]. Consequently, the incidence of this syndrome should have increased [7]. The repeat

* Corresponding author. Tel.: 09121677196; Fax: +98 261 4482648.
E-mail address: b-salasel@kiau.ac.ir (B. Salasel).

breeder cow continually returns to service in the absence of any obvious pathological diseases [8]. Many factors are considered to intervene in this syndrome, such as impaired embryonic development, periovulatory abnormalities, damage to the endometrium [8], stress [9], and inadequate postovulatory progesterone concentrations [10]. It was reported that ovarian cysts, mistimed AI, subluteal progesterone levels, luteal dysfunction, or ovulation defects are risk factors for repeat breeder syndrome [11]. The presence of subclinical endometritis (SE) is one of the etiological factors of repeat breeder syndrome [12–16]. Clinical and subclinical endometritis are common causes of infertility and subfertility in high producing dairy cattle, delaying the onset of ovarian cyclic activity after parturition, extending luteal phases, and reducing conception rates [17]. Studies on SE found prevalence in range of 12–94% [12,13,18,19]. SE, diagnosed by cytology, is associated with substantially reducing pregnancy rate, increasing median time to pregnancy by 30 to 88 days, and increasing the proportion of cows that fail to become pregnant by 300 days in milk (DIM) by 20 percentage points [12,13].

Dystocia, retained placenta, and postpartum uterine infections are some of the most important causes of decreasing reproductive performance in dairy cows [15,16,20,21,22,23,24]. There is general agreement that up to 40% of animals have a kind of metritis within the first two weeks of calving and that, in 10–15% of these animals, infection persists for at least another three weeks causing the chronic uterine disease endometritis [25]. Furthermore, 30–35% of cows have SE between 4 and 9 weeks postpartum [23].

The definitive diagnosis of endometritis is made on the basis of histological examination of endometrial biopsies, and these are predictive for subsequent fertility [26]. However, the technique is costly and time consuming, not clinically accessible in most situations, and may depress fertility [15]. Cytology is more practical and is necessary to diagnose subclinical endometritis [12,13]. Cytology can be done by cytobrush technique [13] or uterine lavage technique [12]. The uterine lavage technique provides a more representative sample of luminal contents than does either a swab or a uterine biopsy, because the lavage technique harvests cells from a larger uterine surface area [27,28].

The aim of this study was to determine the prevalence and risk factors for subclinical endometritis and its effects on fertility in repeat breeder dairy cows.

2. Material and methods

2.1. Study farm

The study was conducted from September 2008 to August 2009 in a large commercial dairy herd, milking approximately 2500 Holstein cows, in center of Iran. Cows were housed in open shed barns and fed a total mixed ration including corn silage, alfalfa/hay, corn meal, barley, and protein supplement two times a day. Herd average milk yield was around 9000 kg per cow, each year. The voluntary waiting period was 50 d for multiparous cows and 60 d for primiparous cows. Heat detection was mostly done via observation, but in many cases the time of estrous was predicted during the ultrasonographic examination. The Time Breeding methods like Ovsynch were used for the animals that did not show any estrous signs.

2.2. Animal experiment and study design

Dairy cows parity 1 to 5 at 190 ± 40 DIM, which were inseminated 3 or more times, were selected ($n = 92$) and their genital system was examined by transrectal palpation and ultrasonography via a 5 MHz linear-array transducer (CTS-900V, SIUI, Japan). Cows with rectal temperature higher than 39.5°C ($n = 2$), abnormal uterine discharge ($n = 1$), abnormal internal genitalia including adhesions ($n = 1$), pyometra ($n = 1$) and urovagina, pneumovagina, and any perineal defects ($n = 6$) were excluded from the study. Ultrasonographic examination included imaging of uterine lumen. Cows with echogenic fluid at uterine lumen in ultrasonographic examination presumed to have clinical endometritis and were excluded from the study ($n = 4$). Clinically normal cows ($n = 77$) were selected based on the absence of abnormal discharges on external inspection and absence of abnormal findings on transrectal palpation and ultrasonographic examination. Cows which had received systemic or intrauterine antibiotic therapy within 6 d prior to enrollment were not selected for the study. Abnormal clinical conditions such as mastitis, lameness, and digestive disorders were not observed in the selected cows in the course of the study.

Recorded data contained parity (1 to 5), any history of previous abnormal calving (dystocia, twin births, and abortion), retained placenta, and postpartum uterine infections. Reproductive indexes such as days to first estrous, days to first service, and conception rate in the next AI after sampling were also recorded.

Download English Version:

<https://daneshyari.com/en/article/2096302>

Download Persian Version:

<https://daneshyari.com/article/2096302>

[Daneshyari.com](https://daneshyari.com)