



Research Article

Ultrasonographical and Hormonal Study on Some Causes of Infertility in Iraqi Goats (*Capra hircus*)

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Abstract: The study was designed to investigate the causes of infertility in Iraqi goats (*Capra hircus*) during the breeding season in Al-Muthanna province from June to November 2021. Twenty-eight infertile goats (study group) and six fertile goats (control group). All animals were examined for causes of infertility by visual inspection of the external genitalia and using transabdominal and transrectal ultrasonography. Results obtained that the most important causes diagnosed by ultrasonography were; higher percent (46.43%) of endometritis, inactive ovaries (21.42%), moderate percent (14.29%) of pyometra, (10.72%) of luteal ovarian cysts, and lower percent (7.14%) without clear diagnostic causes. Hormonally; there is a significant increase ($p < 0.05$) in the serum progesterone level (134.69 ± 11.71) in the case of luteal cysts and pyometra compared with the control group (0.93 ± 0.28), and a significant decrease ($p < 0.05$) in the serum estradiol level in all causes of infertility compared with the control group. In contrast, cortisol evaluation revealed a significant ($p < 0.05$) higher level of cortisol in the case of ovarian inactivity (67.12 ± 11.20) and luteal ovarian cysts (62.50 ± 9.27) compared with the other cases and compared with the control group (28.79 ± 4.42). This study concluded that endometritis, pyometra, and hormonal disturbances (inactive ovaries and luteal ovarian cysts) form the most important causes leading to infertility in Iraqi goats (*Capra hircus*).

Keywords: Infertility, Goats, Ultrasonography, Hormones.

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1. Introduction

the reproductive problems in goats play an essential role in decreasing their reproductive ability and minimizing the chance of pregnancy. Several causes contribute to inducing infertility in goats during the reproductive season, including managemental, nutritional, hormonal, and infectious causes [1,2]. One study in Iraq [3], showed that 16% of non-pregnant doe have one or more lesions that lead to temporary or permanent infertility. Early detection of the causes of infertility in small ruminants and choosing the drug of choice is essential for enhancing reproductive efficiency and increasing the pregnancy rate [2]. The diagnosis of female infertility in goats has a great challenge and difficulties compared to large animals because of the inability to palpate the ovaries and uterus, as well as the seasonal pattern of breeding limiting the time available for medical treatment [4]. Ultrasonography is one of the most critical diagnostic techniques for evaluating and diagnosing pathological cases in different animal species [5–7].

Seasonal anestrus, inactive ovaries, ovarian cysts, silent estrus, and persistent corpus luteum are regarded as the most critical causes of infertility, which can easily be diagnosed through hormonal detection for estradiol, progesterone, and cortisol [5,8]. Metritis is often associated with retention of fetal membranes or trauma to the uterus during dystocia, and it may lead to infertility in some goats, but in ewes, metritis is often associated with a dead fetus, assisted delivery of multiple lambs without proper hygiene, and uterine prolapse [9].