ULTRASONOGRAPHIC IMAGING FOR EARLY PREGNANCY DIAGNOSIS IN MARES

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ABSTRACT

The study was planned to detect pregnancy in mares using ultrasound machine with 7.5 MHz linear rectal probe. The presence of embryo was observed as early as day 10 post insemination using this technique. The conceptus was observed spherical in shape up to day 15 of gestation in mares. This technique of pregnancy diagnosis is less time consuming, reliable, animal friendly, safe and sensitive. Hence, ultrasound can be used as a tool for early pregnancy diagnosis in mares.

Key words: Ultrasound, Mare, Pregnancy diagnosis

The main objective of every equine breeder is to get maximum number of foals from breeding mare in its life-time using the limited breeding season efficiently. It can be achieved if one foal is obtained every year during the breeding life of that mare. The horses, particularly thoroughbreds are very costly, so it is important to know at early date whether the valuable mare has conceived after service or not.

Secondly, if the mare does not conceive after covering and breeder does not go for subsequent mating due to false impression of pregnancy, then there will be loss of one estrus cycle and increase in maintenance cost of the unproductive mare. Thus all the breeding mares need to be examined for pregnancy diagnosis as early as possible after insemination. Traditionally, pregnancy diagnosis in equines was done by rectal examination between 19 to 30 days after service by any operator with sufficient experience (Bain, 1967). Keeping in view the importance of early pregnancy confirmation, we had used ultrasound machine as latest tool to diagnose pregnancy in mares.

Apparently healthy thoroughbreds and Indigenous mares (eight each) aged between 5-15 years were selected for the study. Mares were offered 4 Kilograms (Kg) of concentrate ration daily in two divided feeds. Mares were examined transrectally by real-time B mode linear array rectal examination 7.5 MHz transducer (Dynamic Imaging, France) from day 10 post covering/ insemination in the morning. Ultrasound gel (Medicon Enterprises, Chennai) a water soluble non greasy gel was used as a coupling medium for the ultrasound examination. In order to keep the probe hygienic and to protect it from moisture a plastic sleeve was pulled over the probe. The space between the scanning window of the probe and the plastic sleeve was filled with gel to exclude any air bubble which cause undesirable reflections and thus affect the image quality.

The embryonic vesicle first became visible as fluid filled structure, recognized as non-echogenic sphere of 7 mm in size as in Indigenous mare, Seema (Sonogram No.1). On day 14th, the embryonic vesicle attained the size of 13 mm as depicted in Indigenous mare Anamika (Sonogram No.2). In similar type of study, Kahn (1994) reported that conceptus was first visible between days 9 and 13 of pregnancy in mares. Kahn and Leidl (1984) also observed embryonic vesicle of 14 to 19 mm diameter on day 14 of pregnancy in mares. In similar type of study, Ginther (1986) reported that blastocyst measures 4.7 mm on 10th day of pregnancy. By 14th day there had been gradual increase in the size of embryonic vesicle large enough to make an accurate diagnosis under field conditions using 5 MHz probe. The size of conceptus on 10th day was reported small by Ginther (1986) as compared to the size which was observed in our study, might be due to 7.5 MHz probe used in our study and breed difference.

Conceptus was observed spherical ovoid and irregular in shape (Sonogram No.1, 2). Changes in the

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shape of equine conceptus were in agreement with the observations of Kahn (1994) in pregnant mares. On day 20 after conception, the size of embryonic vesicle was 19 mm in Indigenous mare, Anamika. Our findings confirm the results of Kahn and Leidl (1984). The size of embryonic vesicle was 24 mm in Indigenous mare Hina on day 24 of pregnancy. The present study further revealed that there was no significant difference in the size of the embryonic vesicle during first month of pregnancy in Indigenous (33.37±0.37 mm) and thoroughbred (32.50±0.50 mm) mares. Ginther (1986) also observed that breed related differences in the size of embryonic vesicles are negligible during the first three weeks of pregnancy. Embryo of 12x15 mm has been depicted in the embryonic vesicle of 35 days old pregnancy of thoroughbred mare. Embryo proper is clearly seen reached to the top of the embryonic vesicle by day 32 and 35 of pregnancy in Indigenous and thoroughbred mare, respectively as also reported by Ginther, 1992.

Embryonic mobility is a remarkable phenomenon in the horse, which can be observed by ultrasonography from the time the conceptus first become visible until day 17 of the gestation, Ginther (1983). The mobility of embryo from one horn to another was observed several times between 11-14 days of pregnancy in Indigenous and thoroughbred mares. The conceptus moves from one horn to the other and through the uterine body several times in a day and may be seen at different position within the uterus during successive examination, Ginther (1984). This mobility of embryo is must for maternal recognition of pregnancy in mares (Hershman and Douglas, 1979; Goff *et al.*, 1987). But, for early pregnancy diagnosis during the phase of embryo mobility, it is essential that entire uterus is scanned, as the embryonic vesicle can be located anywhere within the uterine body. It was observed that ultrasound can be used as a tool for early pregnancy in mares.

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No .1

ULTRA SONOGRAM OF INDIGENOUS MARE, SEEMA DEPICTING TEN DAYS PREGNANCY, CONCEPTUS MEASURING -7 M.M.

No . 2

ULTRA SONOGRAM OF INDIGENOUS MARE, ANAMIKA DEPICTING FOURTEEN DAYS PREGNANCY, EMBRYONIC VESICLE MEASURING -13 M.M.