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EARLY PREGNANCY DETECTION USING 2-DIMENSIONAL ULTRASOUND IN KINTAMANI BITCH

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***Abstract*: Ultrasound is widely used for evaluation of pregnancy in small animal Veterinarian. Examination using ultrasound will obtain high accuracy for pregnancy detection. The aim of this study was to determine the effectiveness of ultrasound in early pregnancy detection in kintamani dogs. This research uses 10 kintamani bitches who mated naturally. The tools used is Veterinary Ultrasound named, Veterinary Ultrasound Scanner with a 5-8.5 MHz transducer probe, in the form of B-mode image mode that will be displayed on the 10 inches LCD. Pregnancy examinations performed regularly every two days starting on the 15th day after the mated to detected pregnancy. Gestation is recorded at first-time detection. Determination of gestational age was determined by gestational sac, zonary, fetus membrane, embryo or embryo heart rate. Data were collected and analyzed are images from the ultrasound scanning. The result was the average of pregnancy examinations in dogs kintamani can be observed on the 18th day post-mated. This result can use by Small animal Veterinarian to determine early pregnancy detection of kintamani bitch using Ultrasound.**

***Keywords:* Kintamani Dog, Ultrasound, Pregnancy, Diagnosis, Gestational Sac.**

I. INTRODUCTION

Pregnancy aspects in dogs are very unique if compared to other domestic animal species. Pregnancy duration in dogs is relatively short when compared to other pets. Pregnancy duration in dogs varies from 58 to 63 days from the first mating [1]. This long variation in pregnancy makes it difficult to predict birth precisely. Therefore, an understanding of the timing and clinical relationship of ovulation, fertilization, embryonic and fetal development, also specific changes in the uterus during pregnancy is very important to know. This is important for pregnancy monitoring and management of breeding in dogs. This knowledge is also important to decide if later find that pregnancy is at risk of fetal and maternal death [2]. Early detection of pregnancy and gestational age are very important in the reproduction management for small animal practitioners [3].

In veterinary medicine, the detection of pregnancy and gestational age can be determined by physical examination and radiological examination. Physical examination by palpation and radiological examination is by radiography and ultrasonography [4]. Among the known methods, ultrasound examination (USG) is the most preferred equipment used in diagnosing pregnancy for estimating fetal age, the number of puppies and fetal condition in the womb [5] as well as estimated labour date [6]. Ultrasonography is one of the modern diagnostic tools to determine reproductive organs and reproductive status in dogs [7]. Nowadays, the use of ultrasound is very popular because the results are fast and safe to use at the age of early pregnancy [8]. An ultrasound examination will obtain high accuracy on the 18th to 19th day after the mating. In Shi-Tzu dogs early pregnancy detection can be done on the 20th day, in Beagle dogs detected on the 18th day, and in Yorkshire are detected on day 18-24th [9].

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The Kintamani Dog is the name of a group of local dogs of the mountain type that live around Sukawana Village, Kintamani District, Bangli Regency, Bali. The kintamani dog is the world's first breed of Indonesia dog that is recognised by FCI. This local type of mountain dog has a gorgeous and beautiful appearance that is different from the *geladak* dogs in Bali [10]. In Kintamani dogs, baseline data regarding early pregnancy detection have never been reported. Thus, this study aims to obtain data in order to estimate the age of pregnancy in Kintamani dogs using two-dimensional ultrasonography.

II. MATERIAL AND METHODS

Samples

The study used 10 Kintamani bitches. The age range of bitch is 2-3 years with an average weight of 15 kg. The ten dogs looked clinically healthy and had no history of reproductive disorders. Bitch are kept in individual cages with a size of 3 x 1.3 meters. The location of the cage is in Asubali Kennel, Gianyar. Mating is done naturally where the estrous phase is done by observing anatomic changes in the vagina. The first day of mating is determined as the 0th day of pregnancy.

Ultrasonography

Pregnancy checks are performed serially every two days starting on the 15th day after marriage until the dog is detected pregnant. The dog after general examination then the ventral abdomen hair is saved from the pubis to the cranial umbilicalis. Before the examination, the dog is given a lot of water, so her bladder is full of water. The full bladder helps to guide to find the pregnant uterus. The ultrasound machine that used in this research is "Ultrasound Scanner" Sonodop brand (China), with 5-8.5 MHz linear transducer. The image mode is in the form of B-mode that will be displayed on LCD with a size of 10 inches. Pregnancy examination was performed by positioning the animal in the dorsal recumbency position. Age of pregnancy is recorded at first-time detection. Determination of pregnancy is determined by apparently gestational sacs, zonary, and fetal membranes.

Data Collection and Analysis

The collected data of ultrasound images were tabulated and analysed. The analysis was done descriptively.

III. RESULTS AND DISCUSSION

Ultrasonographic examination of samples was carried out starting on the 15th day after the mating. Based on the results of the examination of 10 Kintamani bitches. Eight bitches were diagnosed pregnant, while two bitches were diagnosed not pregnant. Pregnancy was observed early on the 18th day after the mating. Eight bitches diagnosed pregnancy was confirmed after giving birth on an average day to 62 days after mating. The eight bitches who were positively pregnant on USG examination all gave birth of puppies. While the other two Kintamani bitches diagnosed with no pregnancy were confirmed to be not pregnant after the average 65th day after the mating. During pregnancy testing on this kintamani dog, there were no false positives or false negatives. The use of ultrasound in kintamani dogs is very accurate in diagnosing pregnancy from day 18 after mating. The accuracy of pregnancy detection by ultrasound examination in kintamani dogs is 100% sensitivity and specificity. This result is due to the inspection carried out in series. The accuracy of the examination results in this study is better than the report by Taverne et al. [11]. Who reported that the sensitivity of the use of ultrasound on examination of various breeds of dogs was 92.4% and the specificity was 97.2%.

Table: Ultrasonography result of 10 kintmani bitches

No	Days	USG Result	Puppies
1	18	+	7
2	18	+	5
3	18	-	0
4	18	+	4
5	18	+	5
6	20	+	5
7	18	-	0
8	18	+	4
9	18	+	6

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10	18	+	4

Figure 1. Gestational sac of kintamani dogs (yellow arrow)

In Kintamani dogs, 8 out of 10 early pregnancy samples were detected on the 18th day after first mating while only 1 sample was detected on the 20th day. At 18 days gestation, gestational sacs were detected. Starting at 18 days gestational age, gestational sacs that appear round and anechoic have been detected. The average diameter of GS in kintamani dogs is 5.13 ± 15 mm on the age of gestational are between 18 to 20 days. Gestational sac diameter in kintamani dogs was detected earlier compared with the report of Balaji et al. [12]. Gestational sac diameter can be observed on the 20th day. Balaji et al. [12] found that gestational sac diameter ranges from 1.0 to 1.55 cm at gestational age 26 to 29 days. Gestational sac diameter ranges from 1.2 to 3.3 cm at gestational age 27 to 39 days [8]. The gestational position of the sac can be observed with anechoic colour and is round and dorsal at the bottom of the VU (Fig. 1).

At 18 days of pregnancy, although gestational sacs have been detected, there is no visible embryo at this time. At the age of 18 days can be used to determine pregnancy in kintamani dogs using ultrasound. Lopate [13] states that ultrasonography can be used to diagnose pregnancy in dogs aged 19-21 days. Aissi and Slimani [3] stated that gestational age from 16 days to 21, gestational sac had been seen, but there was no visible embryo. In Beagle dogs, early pregnancy can be detected using ultrasound at the age of 20 when calculated from the LH peak, the 18th day after ovulation and in the Yorkshire race is 18-24 after the first marriage [14]. In Shi-Tzu dogs, early pregnancy has been detected at the age of 12 after marriage [9]. The results of this study indicate that early detection of pregnancy in dogs depends on the breed of dog. So, it can be stated that it seems that gestational sacs depend on breed.

III. CONCLUSIONS AND RECOMENDATION

Ultrasonography is a rapidly developing diagnostic technology that has a lot of benefit to theriogenologists and practitioners, especially in dog reproduction. Ultrasound imaging has a major role in documenting normal physiological events as well as diagnosis and stages of pregnancy. In kintamani dogs, pregnancy detection can be performed on the 18th day after mating. At 18 days gestation, gestation sac with an average diameter of 5.1mm has been seen. Pregnancy diagnosis on Kintamani Dogs is recommended to be carried out on the 18th day and above that. Further research needed to determine the development of the Fetus using ultrasound examination.

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