FUJIFILM
Value from Innovation

2024.06

For Veterinary Professionals

Utilizing the AU10V in various scenarios

SAA
COR
T4
TSH
TBA
PRG

Automated Fluorescence Immunoassay Analyzer for veterinary

FUJI DRI-CHEM IMMUNO AU10V

SAA

SAA has been reported to be useful in evaluating the effect of chemotherapy and detecting suspected infection during myelosuppression.

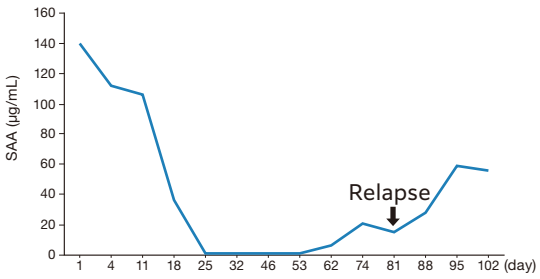

Figure 1. Change in SAA over time in a cat with lymphoma

At the initial visit, a high SAA value was observed, and following complete remission by chemotherapy, SAA improved and fell within the normal range. The elevation of SAA was observed again during relapse.

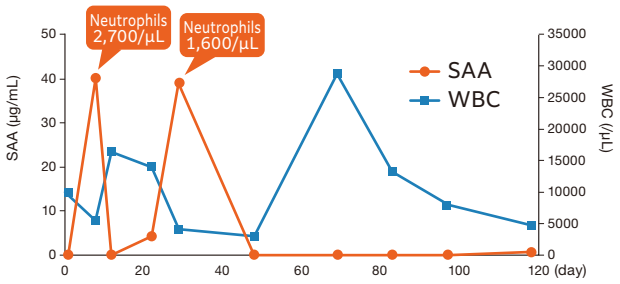

Figure 2. Change in SAA over time in a cat with visceral mastocytoma

Before treatment, SAA was below the lower limit of quantitation. During chemotherapy, a high SAA value was observed, and it was judged that this cat had an infection due to myelosuppression.

Feline SAA is utilized to assist in the diagnosis of various diseases and ascertain treatment effect because it enables quantitative and objective evaluation of inflammation and the condition of the affected cat.
In some cats that received chemotherapy, elevated SAA was observed when there was tumor recurrence*1 (Figure 1) or infection due to myelosuppression*2 (Figure 2). Knowing SAA values measured at the initial visit and at the start of treatment and tracking subsequent changes are helpful in clinical practice.

COR

Three tips to avoid overlooking atypical Addison's disease.
(1) Chronic digestive symptoms, (2) Hypoalbuminemia, and (3) hypocholesterolemia

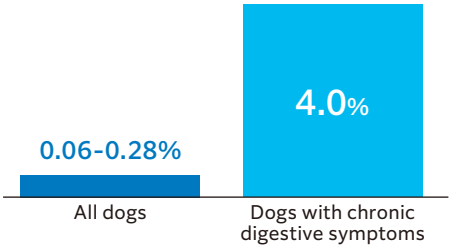

Figure 3. Prevalence of Addison's disease in dogs with chronic digestive symptoms

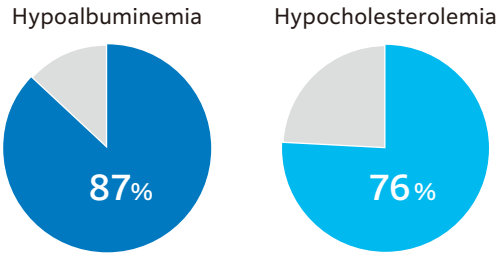

Figure 4. Proportion of dogs with atypical Addison's disease that have abnormal biochemical test results

According to a report from a German study*3, 6 (4%) of 151 dogs with chronic digestive symptoms had Addison's disease (all of them were atypical). This result reflects a much higher prevalence than the prevalence of Addison's disease in dogs overall (0.06–0.28%*4–5). According to a US study report*6. 87% of 40 dogs with atypical Addison's disease had hypoalbuminemia, and 76% had hypocholesterolemia. If a dog has the three findings described above, it is considered desirable to include Addison's disease in the differential diagnoses and to perform an adrenal cortex function test.

T4/TSH

The prevalence of hypothyroidism is 0.2%. Be careful when evaluating T4 concentrations in the blood.

The prevalence of hypothyroidism in dogs is 0.23%*7, indicating that this disease is relatively rare. Factors lowering T4 concentration in the blood include diseases other than hypothyroidism and the administration of certain drugs (euthyroid sick syndrome). It has been reported that when looking at T4, fT4, T3, and TSH concentrations in the blood by disease severity, T4, fT4, and T3 were decreased in moderate to severe disease groups, but TSH tended to remain within its reference range regardless of disease severity*8.

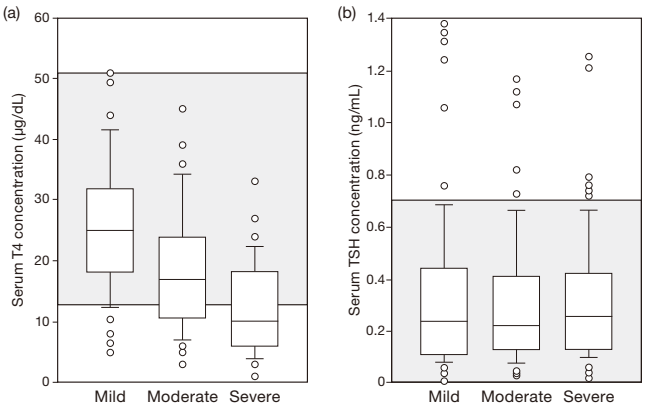

Figure 5. T4 (a) and TSH (b) concentrations in the blood in 223 dogs with diseases other than hypothyroidism by disease severity*8. Shaded areas indicate reference ranges.

TBA

In the meal tolerance tests, the elevation of TBA may be detected by looking solely at pre-prandial TBA.

Regarding the meal tolerance test for TBA, we investigated dog samples outsourced to our company that had at least one sample above the reference range among pre- and post-prandial samples. The results indicated that in 18.9% of the dogs, only their pre-prandial samples were above the reference range and their post-prandial samples were within the reference range. A previous paper reported similar results*9. Thus, the elevation of TBA may be detected by pre-prandial TBA alone.

Consideration of factors leading to higher pre-prandial TBA compared to post-prandial TBA*9

- Spontaneous contraction of the gallbladder during fasting
- The degree of stomach emptiness, the release of cholecystokinin, the responsiveness of cholecystokinin to meals, time to reach the intestines, and difference in intestinal flora

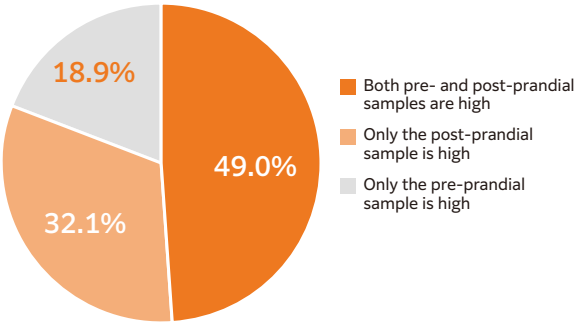

Figure 6. Distribution of pre- and post-prandial TBA in dogs that had a sample with a high TBA value

Distribution of TBA (FUJIFILM VET Systems Co., Ltd. total bile acid) in samples from dogs (n = 4,501) that had at least one sample above the reference range among pre- and post-prandial TBA.

PRG

A method for estimating the optimum timing for mating in dogs: an example of a plan using the measurement of progesterone concentration in the blood.

As a method for estimating the optimum timing for mating in dogs, the determination of ovulation days by measuring progesterone concentration in the blood is one of the methods most recommended by veterinarians specializing in reproduction worldwide*10. Although blood progesterone level needs to be measured multiple times just before ovulation, it is considered that the number of measurements can be reduced by determining when to start measuring blood progesterone level on the basis of vaginal smear results.

Progesterone concentration in the blood (ng/mL)	Determination	Plan
≤ 1.0	Before ovulation	Remeasurement 3–4 days later
≤ 2.0	Before ovulation	Remeasurement 2 days later
2.0–2.9	Before ovulation	Remeasurement the next day
2.9–3.3	Ovulation	Mating once: once 2–4 days after ovulation Mating twice: 2 and 4 days after ovulation
≥ 3.5	After ovulation	—

Table 1. Determination of the ovulation days by measuring progesterone concentration in the blood in dogs and formulating mating plans accordingly

(from results of clinical investigation using FUJI DRI-CHEM IMMUNO AU cartridge v-PRG)*11

References

*1 VETERINARY BOARD. 2020 OCTOBER. 18.88-102
*2 FUJIFILM Veterinary Seminar "Utilization of SAA as an in-house test, the 2022 edition" by Takashi Tamamoto
*3 C Hauck et al. 2020. J Vet Intern Med. 34(4):1399-1405.
*4 W J Kelch et al. University of Tennessee,1996.
*5 J M Hanson et al. 2016. J Vet Intern Med. 30:76-84.
*6 J. A. Wakayama et al. 2017. J Small Anim Pract. Jul;58(7):365-371.
*7 Dan G. O' Neill et al. 2022. Canine Medicine and Genetics. 9:11.
*8 Kantrowitz et al. 2001. J Am Vet Med Assoc. 15;219(6):765-9.
*9 Center SA et al. 1991. JAVMA 199:217-226.
*10 S Arlt. 2018. Reprod Dom Anim. 53(Suppl. 3): 53–62.
*11 FUJIFILM Veterinary Seminar "In-house progesterone test: from the determination of the optimum timing for mating to its application to reproductive disorders in dogs"

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Product Technical Information AU10V (24・06・F1079)