

Potential influence of sex and age on serum annexin A1 levels in dogs: implications for inflammatory regulation

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Background & Aim: Annexin A1 (AnxA1), also known as lipocortin 1, is a calcium-dependent protein regulated by glucocorticoids, playing a pivotal role in immune modulation and inflammation resolution. In humans, AnxA1 serves as a biomarker for inflammatory, autoimmune, and cardiovascular diseases, as well as cancer, highlighting its diagnostic and prognostic potential [1]. This study aimed to evaluate AnxA1 serum levels in healthy dogs, examining potential sex- and age-related variations. **Methods:** A total of 45 healthy dogs were enrolled. Each dog underwent physical examination, complete blood count, serum biochemistry, and screening for infectious diseases (Uranotest QUATTRO® assay). Serum AnxA1 levels were measured using Canine Annexin A1 ELISA kit (MyBiosource, Inc., CA, USA). **Results:** The median age was 5 years (25th percentile: 3; 9), while the median body weight was 18 Kg (9.25; 23). AnxA1 levels were significantly higher in older dogs (>7 years, $n = 20$) compared to younger ones (≤ 3 years, $n = 13$) with median values of 1049 pg/mL (550.3; 2254) and 267 pg/mL (200.3; 457.1), respectively ($p = 0.004$). Additionally, a significant positive correlation was also observed between age and AnxA1 serum levels ($n=45$, $r = 0.44$, $p = 0.002$). Regarding sex-related differences, intact females ($n = 17$) tended to exhibit higher AnxA1 levels than males ($n = 26$) (864.5 pg/mL (391.9; 6607) vs. 338 pg/mL (231.3; 1148), $p = 0.0535$).

Conclusions: AnxA1 expression in dogs appears to be influenced by both sex and age. Its increase with aging may represent a compensatory response to age-associated chronic low-grade inflammation, aligning with age-related increases observed in inflammatory and neurodegenerative conditions [2, 3]. The seemingly higher AnxA1 values in females suggest that while sex may influence AnxA1 expression, additional factors may be involved, and further studies with larger sample sizes are needed to clarify potential hormonal influences [4].

Keywords: Age, annexin A1, biomarker, dog, sex

References:

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