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Optical coherence tomography and molecular analysis of sudden acquired retinal degeneration syndrome (SARDS) eyes suggests the immune-mediated nature of retinal damage.

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Author information

Abstract

OBJECTIVE: To perform detailed analysis of retinal changes in dogs with SARDS using optical coherence tomography (OCT), funduscopy, and molecular analysis.

ANIMALS: Subjects were 29 dogs from 12 US states and Canada diagnosed with SARDS by 8 ophthalmologists. An additional 7 eyes from 5 deceased SARDS dogs were used for molecular and histological analysis.

PROCEDURES: Dogs were evaluated using chromatic pupil light reflex testing (cPLR), and electroretinography (ERG); subjects underwent complete ophthalmic examination, including funduscopy, retinal photography, and OCT, in addition to complete laboratory analysis, blood pressure evaluation, abdominal and thoracic radiographs, and computerized tomography (CT) imaging to assess possible systemic abnormalities. Histology and immunohistochemistry analysis was performed in 2 SARDS eyes. Microarray analysis was performed in 5 SARDS retinas.

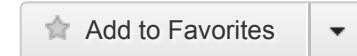
RESULTS: Thirty-eight percent of patients had <1-mm wide retinal detachments (RD) on OCT analysis, which could not be detected by funduscopy or retinal photographs. Systemic hypertension did not seem to be a contributing factor (RD 22.2%; ND 20%, Odds ratio = 1.1). No dogs showed neoplastic changes by thoracic or abdominal radiography, or CT imaging. There was no statistically significant difference in age (RD 7.9 ± 1.9 years (mean \pm SD); ND 7.6 ± 1.7 years, $p = 0.69$) or duration of blindness prior to presentation (RD 18 ± 7 days (mean \pm SD); ND 21 ± 12 days, $p = 0.28$). Microarray and histology analysis of SARDS eyes revealed molecular changes suggestive of immune-mediated damage.

CONCLUSIONS: Observed histological, molecular, and OCT changes are highly suggestive of immune-mediated damage in SARDS eyes.

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KEYWORDS: canine; detachment; immune; microarray; optical coherence tomography; retina; sudden acquired retinal degeneration syndrome

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