

Clinical Management of Canine and Feline Conjunctivitis

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Learning Objectives

1. To understand the different clinical signs associated with conjunctivitis and basic clinical approach to dogs and cats with conjunctivitis
2. To be familiar with the etiologies of conjunctivitis in companion animals, including their appropriate therapeutic management

Outline

- 1) General information
- 2) Conjunctival anatomy and physiology
- 3) Clinical signs
- 4) Clinical evaluation
- 5) Conjunctivitis etiologies
 - a. Primary conjunctival diseases
 - b. Secondary manifestation of other ocular diseases
 - c. Secondary manifestation of systemic diseases

1) General Information

Conjunctivitis is a frequent condition for which small animals are presented to veterinarians for evaluation. The etiologies of conjunctivitis are numerous and diverse. Conjunctivitis etiologies include primary conjunctival diseases and conjunctivitis that develops secondary to other extraocular, intraocular, and systemic conditions. Clinical manifestations of conjunctivitis are frequently non-specific and may be similar with diverse etiologies. Although the primary etiologies of conjunctivitis occur commonly, other severe ocular diseases and potentially-life threatening systemic conditions can initially present as conjunctivitis. This necessitates that a methodical clinical approach to conjunctivitis always be followed.

2) Essential Anatomy and Physiology

Conjunctiva is the mucous membrane covering the posterior aspect of the eyelids, palpebral and bulbar surfaces of the nictitans membrane, and anterior portion of the globe. The conjunctiva is composed of non-keratinized, stratified epithelium and the underlying connective tissue (termed the substantia propria). Mucin-producing goblet cells are present in the conjunctival epithelium and the substantia propria contains vessels, nerves, and lymphoid tissue. Rich vascular supply, loose arrangement of the substantia propria, and resident lymphoid tissue contribute to the conjunctiva's ability to rapidly, and often dramatically, respond to insults.

3) Clinical Signs

Conjunctiva has limited mechanisms by which it can respond to damage and disease processes, thus the etiology of conjunctivitis can usually not be determined from clinical signs alone.

Conjunctivitis is associated with a combination of the following clinical signs: ocular discharge, chemosis, hyperemia, discomfort, pruritus, tissue proliferation, ulceration, and hemorrhage. Ocular discharge may be characterized by serous, mucoid, mucopurulent, or serosanguinous fluids. Epiphora, an overflow of serous tears, results from excessive tear production or inadequate nasolacrimal drainage. Chemosis appears as conjunctival swelling and is conjunctival edema resulting from increased vascular permeability with fluid extravasation into the substantia propria. Hyperemia is a red conjunctival discoloration (often described as “red eye”) and is a clinically observable manifestation of vasodilation and increased conjunctival blood flow. Ocular discomfort and pruritus most commonly manifest as blepharospasm, periocular rubbing, or self-trauma.

Tissue proliferation is divided into two distinct types: lymphatic and epithelial. Lymphatic proliferation is frequently termed follicular conjunctivitis and appears as small, round, semi-transparent elevated lesions representing lymphocytic aggregates in the conjunctiva. Occasional conjunctival lymphatic follicles on the posterior aspect of the nictitans membrane are considered normal; however, increased numbers of follicles or their presence in other anatomic locations is a pathologic change. Epithelial hyperplasia or keratinization results in variably sized, irregular, opaque, pink-to-red, elevated lesions. Both lymphatic and epithelial conjunctival tissue proliferations are indicative of chronic conjunctival inflammation. Ulceration of conjunctival epithelium may develop with severe conjunctivitis or as a result of some specific etiologies (e.g., external trauma, viral infection). Hemorrhage may occur in the conjunctival epithelium or subconjunctival space and appears as variably shaped and sized bright or dark red regions.

4) Clinical Evaluation

The clinical approach to conjunctivitis is similar to any non-specific ocular lesion that is associated with a variety of different potential etiologies. A thorough history, physical examination, and complete ocular examination (including Schirmer tear tests, fluorescein stain, and tonometry) are performed to identify the specific etiology or to narrow the differential diagnosis and exclude more serious causes of secondary conjunctivitis such as systemic or intraocular disease.

5) Conjunctivitis Etiologies

Etiologies of conjunctivitis include: primary conjunctival diseases, secondary manifestation of other ocular diseases, and secondary manifestation of systemic diseases. Primary etiologies of conjunctivitis are those where the disease process is limited to the conjunctiva and include allergic, frictional irritant, immune-mediated, infectious, and traumatic conditions.

A. Primary Conjunctival Diseases

Allergic Conjunctivitis

Conjunctivitis associated with allergic conditions can be divided into three general types: atopic, drug reaction, and insect envenomation. Atopic conjunctivitis is often accompanied by atopic dermatitis and animals frequently present with mild and seasonal hyperemia, chemosis, epiphora, and ocular pruritus. Conjunctival follicle formation occurs with chronicity. Atopic conjunctivitis is generally a diagnosis of exclusion; however, concurrent atopic dermatitis and seasonality are suggestive. Treatments may include topical corticosteroids, topical cyclosporine, or desensitization therapy.

Drug reaction conjunctivitis is a hypersensitivity reaction that may result in severe clinical signs. Concurrent blepharitis, often with dermal ulceration, is frequent. Conjunctivitis may develop at any time during drug use and with any medication. Topical neomycin and carbonic anhydrase inhibitors are especially frequent causes in companion animals. Diagnosis is by discontinuing all ophthalmic medications for one to two weeks and slowly reintroducing medications individually until the offending drug is identified.

Insect bites and stings may produce severe conjunctivitis. This form of conjunctivitis typically has a rapid onset and is characterized by severe bilateral chemosis with the conspicuous absence of other clinical signs of conjunctivitis acutely. Treatments may include topical or systemic corticosteroids and antihistamines.

Frictional Irritant Conjunctivitis

Endogenous and exogenous irritants may result in conjunctivitis. These irritants include conjunctival foreign bodies, dermoids, and abnormalities of the eyelids, cilia, and periocular facial hair. Diagnosis of frictional irritant conjunctivitis is made by identifying one or more of these irritant conditions during ocular examination. Treatment is removal of the frictional irritant.

Immune-Mediated Conjunctivitis

Diffuse episcleritis and nodular granulomatous episcleritis are canine conditions that present with conjunctival hyperemia and thickening. Peripheral keratitis is common. Lesions may be unilateral or bilateral. Nodular granulomatous episcleritis is associated with formation on one or more distinct, firm, smooth-surfaced masses. Diffuse episcleritis is clinically similar, but without the nodule formation. Atypical pannus, or plasmoma, is an alternative presentation of canine pannus (aka-chronic superficial keratitis) where the primary clinical lesions occur in the conjunctiva as opposed to the cornea. Atypical pannus presents clinically as a bilateral hyperemic thickening of the nictitans conjunctiva associated with multifocal follicle formation and varying degrees of depigmentation and pigmentation. Treatments for these conditions include topical corticosteroids, cyclosporine, and tacrolimus. Life-long treatment is often required.

Eosinophilic conjunctivitis is a condition of cats that clinically presents as unilateral or bilateral conjunctivitis, often with associated keratitis. Treatment is similar to canine episcleritis. Lipogranulomatous conjunctivitis is a feline disease associated with nonulcerative white nodules in the palpebral conjunctiva adjacent to the eyelid margin. Definite treatment requires surgical nodule excision.

Diagnosis of all the immune-mediated conjunctival conditions in dogs and cats is made by clinical appearance and conjunctival cytology or biopsy when necessary.

Infectious Conjunctivitis

Conjunctivitis may result from bacterial, viral, and parasitic infection. Bacteria are not a known etiology of primary conjunctivitis in dogs; however, secondary bacterial conjunctivitis is common, exacerbates clinical ocular lesions, and complicates the management of conjunctivitis associated with other etiologies in both cats and dogs.

Chlamydia felis and *Mycoplasma* spp. infection are common causes of feline conjunctivitis. Treatment options include topical oxytetracycline or erythromycin. Alternatively, systemic doxycycline or azithromycin are typically effective options.

Primary conjunctivitis may result from direct viral infection of the conjunctival epithelium, including canine herpesvirus-1, canine adenovirus-2, feline herpesvirus-1, and feline calicivirus. Treatment options for herpetic infections include a variety of topical and systemic antiviral therapies. Conjunctivitis may also be a prominent feature of various other systemic viral infections (e.g., canine distemper virus, canine influenza), but these animals will also present with concurrent systemic illness.

Parasitic conjunctivitis may result from thelaziasis or onchocerciasis. *Thelazia* spp. are nematodes transmitted by flies that reside in the conjunctival fornix and nasolacrimal duct. Diagnosis is by identifying the motile parasites on the ocular surface. Therapy for thelaziasis is manual nematode removal or antiparasitic agents. *Onchocerca* spp. are filaria that produce conjunctivitis associated with single or multiple bulbar conjunctival nodules. Diagnosis is by histopathologic or molecular demonstration of the parasites. Therapy is by surgical excision of nodules combined with antiparasitic agents.

Traumatic Conjunctivitis

Blunt or penetrating ocular trauma can produce conjunctivitis. Both forms may be self-inflicted in companion animals with other painful or pruritic ocular diseases. Conjunctival trauma is often associated with dramatic initial chemosis, subconjunctival hemorrhage, and ulceration of conjunctival epithelium. Therapy is supportive in most cases.

B. Secondary Manifestation of Other Ocular Diseases

Anatomical proximity, shared blood supply, and extensive vascular and lymphoid tissue may result in the conjunctiva being secondarily affected by other ocular diseases. Conjunctivitis is a frequent manifestation of a variety of serious extraocular and intraocular diseases, including blepharitis, ulcerative keratitis, keratoconjunctivitis sicca, uveitis, glaucoma, and orbital disease. Failure to exclude other ocular conditions as the etiology of conjunctivitis is avoided by performing a complete ocular examination. When conjunctivitis is a secondary manifestation of another ocular disease, therapy is directed at the primary condition.

C. Secondary Manifestation of Systemic Diseases

Systemic diseases may first manifest in a detectable manner as conjunctivitis. This is primarily because the conjunctiva is readily accessible and observable. The extensive vascular and lymphoid tissues within the conjunctiva also render it susceptible to generalized vascular and lymphatic diseases. Infectious, neoplastic, vascular, and hematologic conditions are especially likely to present as conjunctivitis, with or without additional ocular abnormalities. In the majority of animals, historical and physical examination findings will suggest a systemic disease process.