

Pediatric Feline Upper Respiratory Disease

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KEYWORDS

- Feline herpesvirus-1 • Feline calicivirus • *Mycoplasma* • *Streptococcus* • *Chlamydia*
- Famciclovir

KEY POINTS

- Feline upper respiratory tract disease (URTD) is an important cause of morbidity and mortality in kittens, especially those held in population-dense and unhygienic conditions.
- Multiple bacterial and viral pathogens are involved and can cause similar clinical signs.
- Caution is required when interpreting the results of diagnostic tests for feline URTD pathogens because the presence of the pathogen does not always imply disease causation.
- Famciclovir or topical cidofovir are emerging as effective antiviral treatments for kittens with severe URTD that is caused by feline herpesvirus-1, but these drugs are not effective for other causes of feline URTD and indiscriminate use may result in drug resistance.
- Reducing stress and overcrowding in combination with vaccination and proper disinfection is likely to be the most effective means to prevent feline URTD in kittens housed in population-dense environments.

INTRODUCTION

Infectious feline upper respiratory tract disease (URTD) continues to be a widespread and important cause of morbidity and mortality in kittens, especially those held together in overcrowded or stressful conditions.¹ The clinical signs of disease vary considerably in severity and include lethargy, inappetence, sneezing, conjunctival hyperemia, serous to mucopurulent nasal and ocular discharges, hypersalivation, and in some cases respiratory distress caused by bronchopneumonia and death.

Multiple pathogens can contribute to URTD in kittens, and coinfections are common in overcrowded environments and contribute to increased disease severity. Worldwide, the most prevalent pathogens are feline herpesvirus-1 (FHV-1) and feline calicivirus (FCV). Mucopurulent discharges that develop in cats with these viral infections result from secondary bacterial infections with opportunistic pathogens, such as

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Streptococcus spp, *Staphylococcus* spp, *Pasteurella multocida*, and *Escherichia coli*. Primary bacterial causes of URTD disease in cats include *Bordetella bronchiseptica*, *Chlamydia felis*, and *Mycoplasma* spp. *Streptococcus canis* and *Streptococcus equi* subspecies *zooepidemicus* occasionally play a role as primary pathogens in shelter situations and catteries.

This article reviews the major causes of disease in kittens, and provides an update on treatment and prevention strategies.

FELINE HERPESVIRUS-1 INFECTION

Most cats are likely exposed to FHV-1 during their lifetime. The virus survives less than a day at room temperature and is readily inactivated by most disinfectants. As a result, transmission occurs primarily through close contact, although fomites are likely to be an important mode of transmission in crowded environments. FHV-1 has been detected using culture in 0% to 39% of cats with URTD, although when sensitive polymerase chain reaction (PCR) assays are used to detect FHV-1, infection prevalences close to 100% have been detected in some groups of cats with acute respiratory disease.² The prevalence of shedding by apparently healthy cats ranges from 0% to 10%, and most often has been lower than 2%.^{1,3-9} Virtually all infected kittens develop latent infection after recovery, which primarily occurs in the trigeminal ganglia. Reactivation of shedding, with or without concurrent clinical signs of URTD, occurs in less than half of latently infected cats 4 to 12 days after stress.¹⁰ Reactivation of shedding by queens during lactation is thought to be an important contributor to new kitten infections.

Clinical signs of FHV-1 infection in kittens vary considerably in severity, from intermittent sneezing and conjunctivitis to severe bronchopneumonia and death. Although FHV-1 prefers to replicate in the lower temperatures of the upper respiratory tract, systemic infection with viremia may be more likely to occur in neonates. Damage to the upper respiratory epithelium may be followed by osteolysis of the nasal turbinates and persistent or recurrent sinusitis and rhinitis. In kittens with physiologic ankyloblepharon (adhesion of the ciliary edges of the eyelids), ocular infection may lead to the accumulation of pus in the conjunctival sac (conjunctivitis neonatorum) (Fig. 1).



Fig. 1. Conjunctivitis neonatorum results in the accumulation of pus under the closed eyelids of neonatal kittens. Feline herpesvirus-1 is commonly implicated. (From Little SE. Pediatrics. In: Little SE, editor. The cat: clinical medicine and management. 1st edition. Philadelphia: Saunders; 2011. p. 1242; with permission.)

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