

EOSINOPHILIC PNEUMONIA

(INFLAMMATION OF THE LUNGS WITH EOSINOPHILS, A TYPE OF WHITE-BLOOD CELL)

BASICS

OVERVIEW

- Inflammation in the lung as a response to antigens (substances that induce sensitivity or immune response), characterized by accumulation of eosinophils (a type of white-blood cell) and fluid into the lung, conducting airways (bronchi and bronchioles), and alveoli (the terminal portion of the airways, in which oxygen and carbon dioxide are exchanged)
- “Pneumonia” is inflammation of the lungs
- “Eosinophils” are a type of white-blood cell; they are involved in allergic responses by the body and are active in fighting and damaging larvae of parasites in the body

SIGNALMENT/DESCRIPTION of ANIMAL

Species

- Dogs

Breed Predislection

- The Siberian husky may be more likely to develop eosinophilic pneumonia than other breeds

Mean Age and Range

- All ages

SIGNS/OBSERVED CHANGES in the ANIMAL

- Extremely variable, depending on the severity
- Harsh, moist cough—unresponsive to antibiotic therapy
- Fever
- Labored breathing
- Difficulty breathing (known as “dyspnea”)
- Exercise intolerance
- Lack of appetite (known as “anorexia”)
- Sluggishness (lethargy)
- Weight loss
- Nasal discharge (may be yellow-green or a combination of mucus and pus)
- Abnormal breath sounds on listening to the lungs with a stethoscope (known as “auscultation”)—increased-intensity breath sounds; short, rough snapping sounds (known as “crackles”); and squeaking or whistling sounds (known as “wheezes”); decreased sounds can occur
- Enlarged lymph nodes (known as “peripheral lymphadenopathy”)—rare

CAUSES

- Substances to which the dog has developed an allergy that are spread through the air (known as “aeroallergens”)—spores or threadlike filaments (known as “hyphae”) from fungi and actinomycetes; pollen; insect antigens; unidentified triggers of the immune response
- Parasitic antigens—heartworm microfilariae (the immature form of the heartworm, found in the blood of animals, especially dogs); respiratory parasites (parasites that reside in the respiratory tract or in the blood vessels of the lungs)

RISK FACTORS

- Living in a heartworm-endemic area (that is, an area where heartworms commonly are found in dogs and to a lesser extent, found in cats), without receiving heartworm preventive medication
- Dusty or moldy environment
- Air pollution

TREATMENT

HEALTH CARE

- Inpatient—recommended with signs involving multiple body systems (such as lack of appetite [anorexia], weight loss, and sluggishness [lethargy])
- Maintain normal hydration—important to aid the normal secretion clearance mechanism of the lungs; use a balanced electrolyte solution
- Oxygen therapy—for severe breathing difficulties (known as “respiratory distress”)

ACTIVITY

- Restricted during treatment (inpatient or outpatient)

DIET

- Ensure normal intake

SURGERY

- May surgically remove lung lobes with large inflammatory nodules (known as “granulomas”)

MEDICATIONS

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- Steroids—prednisolone or prednisone, until clinical signs begin to resolve; then decrease dose slowly (over months), as directed by your pet’s veterinarian
- Heartworm treatment—for heartworm-positive dog; initiate after the patient has been stabilized with steroids and rest
- Itraconazole or ketoconazole are drugs used to treat fungal infections; they are considered to be “antifungal drugs”—may be used with confirmed allergic response to fungal infection of the bronchi or lungs, which is a rare condition; use antifungal drugs only if the fungal infection is confirmed by microscopic evaluation of samples from the lungs or fungal culture
- Hyposensitization—“allergy shots” based on results of skin or serum testing may be attempted to decrease the allergic response, but is not the treatment of choice in most patients; most dogs still will require steroid therapy
- Other drugs that decrease the immune response (known as “immunosuppressive drugs”), such as cyclosporine, cyclophosphamide, azathioprine, and mercaptopurine—may use when steroids are contraindicated or have been ineffective
- Drugs to dilate the bronchi or bronchioles (known as “bronchodilators”)—may be helpful, particularly if squeaking or whistling sounds (wheezes) are heard when listening to the lungs with a stethoscope or labored breathing is observed

FOLLOW-UP CARE

PATIENT MONITORING

- Complete blood count (CBC) will show resolution of increased number of eosinophils in the circulating blood (known as “peripheral eosinophilia”) as the animal responds to treatment
- Arterial blood gases, to monitor levels of oxygen and carbon dioxide in the blood—most sensitive monitor of progress
- Listen to the patient’s lungs (auscultate) thoroughly several times daily, while hospitalized
- Chest X-rays—improve more slowly than the clinical signs

PREVENTIONS AND AVOIDANCE

- Routine heartworm-prevention medication
- Change patient’s environment, if a substances to which the dog has developed an allergy that is spread through the air (aeroallergen) is suspected

POSSIBLE COMPLICATIONS

- Blood clots in the lungs (known as “pulmonary thromboembolism”)—patients treated for adult heartworms (known as “dirofilariasis”)

EXPECTED COURSE AND PROGNOSIS

- If primary allergen (substance to which the dog has developed an allergy) is identified and eliminated—prognosis good for mild cases
- If allergen (substance to which the dog has developed an allergy) is not identified—prognosis for control good; many patients require long-term treatment with steroids
- Heartworm infection—prognosis depends on severity of increased blood pressure in the lungs (known as “pulmonary hypertension”); enlargement of the right ventricle of the heart (known as “cor pulmonale”); and blood clots (thromboembolism)
- Condition characterized by multiple large, inflammatory nodules containing eosinophils (known as “eosinophilic granulomatosis”)—prognosis guarded; often disease is progressive
- High death rates are associated with severely low levels of oxygen in the blood (known as “hypoxemia”)

KEY POINTS

- Inflammation in the lung as a response to antigens (substances that induce sensitivity or immune response), characterized by accumulation of eosinophils (a type of white-blood cell) and fluid into the lung, conducting airways (bronchi and bronchioles), and alveoli (the terminal portion of the airways, in which oxygen and carbon dioxide are exchanged)
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