EQUINE DERMATOLOGY II

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URTICARIA IN THE HORSE

Urticaria (hives) is a variably pruritic, edematous wheal formation of the skin that is immunologic or nonimmunologic in nature. Of all species of domestic animals, horses show the greatest incidence of urticaria. It is important to keep in mind that urticaria is a symptom or a sign of a disease rather than a specific disease entity. The clinical manifestations can vary from a minor transitory event to a major, systemic, and possibly, although rarely, a life threatening problem. There is no gender predisposition and average age is between 1-10 years of age. Thoroughbreds and Arabians may be predisposed.

PATHOGENESIS OF URTICARIA

Urticaria results from mainly mast cell degranulation, although basophil degranulation is thought to contribute to the lesions. Mast cell degranulation causes a release of potent chemical mediators such as histamine, heparin, as well as cytokines, prostaglandins and leukotrienes that all contribute to increased vascular permeability and inflammation. This results in wheal formation. There are several underlying causes that fall under two categories (1) immunologic and (2) nonimmunologic. Immunological causes most often are related to a hypersensitivity reaction. Most commonly, Type I, however Type III reactions have been incriminated. Nonimmunologic causes include physical forces (pressure, sunlight, heat, cold, and exercise), physiologic stress, and genetics. Unfortunately, many cases of urticaria in horses are idiopathic.

Immunologic (allergic) urticaria is classified in the following categories; (1) Drug eruptions (including all chemical compounds are considered drugs, routine prophylactics, deworming products, vaccines). Drugs that have been incriminated are as follows; penicillin, tetracycline, sulfonamides, neomycin, ciprofloxacin, streptomycin, aspirin, phenylbutazone, flunixin, phenothiozines, guaiphensin, aspirin, sulfonamides, neomycin, ciprofloxacin, streptomycin, aspirin, phenylbutazone, flunixin, phenothiozines, guaiphensin, ivermectin, moxidectin, pethidine, iron, dextrans, vitamin B complex and liver extracts, hormones.

(2) Insect bite hypersensitivity (Culicoides spp., stable flies, horses flies, mosquitoes, chiggers, etc.); (3) Food allergy; (4) Atopic dermatitis; (5) Vasculitis; (6) Contact urticaria. Nonimmunologic urticaria most often involves a physical trigger. The three most common causes are; (1) Dermatographism-pressure urticaria (2) Cold urticaria (3) Exercise induced. Others include infections (bacterial, viral, fungal, parasitic, protozoal), and snake bites.

CLINICAL SIGNS

Urticaria is common in horses. Clinical signs can be acute or transient (most common) or chronic and persistent. Acute urticaria is defined as episodes lasting less than 6-8 weeks. The characteristic urticarial lesion is a wheal - a flat topped papule / nodule with steep-walled sides. It is the result of localized edema in the dermis. Most often the lesions are a few millimeters to several centimeters in diameter and a few millimeters in height, and each lesion persists for approximately 24-48 hours. The lesions are typically normal temperature and pit with digital pressure. Occasionally, urticaria can appear as bizarre shapes and patterns such as serpiginous, linear, arciform, annular and papular. They often coalesce to cover large area and appear as a plaque. The hair may appear raised on the urticarial lesion. Lesions can appear anywhere, however they are most commonly seen on the neck, trunk and proximal extremities. Pruritus is variable.

Clinical Classification of Lesions

I. Conventional urticaria-characterized by papules and wheals that vary from 2mm to 5 cm in diameter.

II. Papular urticaria-Characterized by uniform, small, 3-6 mm diameter papules. This type is most often associated with stinging insects, especially mosquitoes and Culicoides.

III. Giant urticaria-characterized by wheals that are very large, up to 20-40 cm in diameter. A major differential is vasculitis.

IV. Exudative urticaria-This type occurs when severe dermal edema leads to oozing matting of hairs, and alopecia. The serum transudation may mask the urticarial nature of the lesions and may appear as other processes such as pyoderma. Crusting can be seen.

V. Gyrate (polycyclic) urticaria-wheals occur in bizarre shapes: arciform, serpiginous, or doughnut shaped that are often associated with drug reactions. This form can persist for months. A major differential is erythema multiforme. Lesions of erythema multiforme typically do not exhibit pitting with digital pressure.

VI. Angioedema (angioneurotic edema) - This is an edematous lesion similar in pathology and pathogenesis to urticaria, however the edema involves large areas of subcutaneous tissues. The lesions are more diffuse because there is no localized dermal edema. This type usually involves the head and/or extremities. In addition, this type signifies a more systemic and serious disease than urticaria.

DIAGNOSIS

The diagnosis of urticaria is fairly straight forward based on the acute nature of the lesions and the lesion appearance. When the lesion is questionable, as with cases of exudative urticaria, the presence of pitting edema is an important clue. A biopsy is not always necessary, however may help differentiate between urticaria and pyoderma, Pemphigus, dermatophytes or reveal an underlying vasculitis. The challenge lies in the diagnosis of the underlying cause of the urticaria and can be frustrating for the client and the veterinarian. The work-up consists of ruling out several differential diagnoses that can be time consuming and expensive.

The medical history is the most important tool for determining the cause of urticaria. It is important to cover general questions such as; age of onset, how many episodes have been noted, seasonal or nonseasonal, pruritic or nonpruritic. A seasonal reoccurrence suggests insects, atopy, seasonal food items or cold (winter). A complete drug history is mandatory including deworming medication and supplements. Medications, vaccines, dewormers, supplements should be noted and ingredients examined that

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have been given in the two weeks prior to or at the onset of the lesions. In addition to drug usage, investigation should focus on making any associations between the onset of urticaria and the drug given. Other associations with the onset of urticaria and onset of cold weather, a food change or following exercise should be included in your investigation.

Localized lesions can suggest topical products, plants, tack, blankets, bedding, etc. Most commonly implicated contactants include medicated sprays, rinses and pour-ons, tack and saddle soaps, leather conditioners, and pasture plants. Cold induced urticaria can be diagnosed by applying an ice cube on the skin for a few minutes and watching for the development of urticaria within 15 minutes.

Dermatographism can be determined by “writing” on the horse with a blunt instrument (e.g. hemostat tip or ball point pen with cap on). Place a fair amount of pressure on the skin. A positive reaction is indicated by the development of a line of urticaria at the site of pressure line within 15 minutes. This type of urticaria is seen with pressure from saddle or tack.

Exercise induced urticaria is only caused by exercise and not by passive heating of the skin. The diagnosis is confirmed by a 30 minute exercise period producing the urticaria. This is

The most common cause of urticaria in Florida horses is insect hypersensitivity, especially Culicoides spp. This is ruled out by strict insect control which is discussed in the treatment section. Once this is ruled out, then depending on whether there is seasonality or not, food allergy or atopic dermatitis will be investigated. Food allergies are evaluated by elimination diets for 8-10 weeks and rechallenging with suspected feed or additives. Investigation into atopic dermatitis requires intradermal skin testing and/or serum tests for antigen specific IgE. This is usually done when all other differentials have been thoroughly ruled out. At this time the intradermal skin test continues to be the gold standard. Serum IgE testing for atopic disease should be interpreted with great caution as false positives and false negatives occur with frequency.

**CLINICAL MANAGEMENT**

The prognosis of urticaria is very good because the overall health of the horse is not affected. Therapy depends on the underlying cause that is identified through a thorough work up. Often acute episodes are treated with systemic steroids. However, in chronic cases this is not recommended. All drugs or supplements the horse is receiving are discontinued or eliminated if possible.

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**REFERENCES**