ERYTHEMA MULTIFORME IN A PONY

Erythema multiforme bij een pony

S. Van Poucke[1], H. Van Hauwermeiren[2], L. Hunt[3], K. Chiers[4], R. Ducatelle[4]

[1]The Veterinary Practice, Millennium Way, Braintree, CM7 3YU, Essex, United Kingdom
[2]Medanex bvba, Vennestraat 40, B-3290 Schaffen, Belgium
[3]University of Minnesota, College of Veterinary Medicine,
1333 Gortner Avenue, MN55108, St. Paul, USA
[4]Ghent University, Faculty of Veterinary Medicine, Pathology,
Salisburylaan 133, B-9820, Merelbeke, Belgium

ABSTRACT

Erythema multiforme was reported in a Welsh Pony. The pony suddenly displayed pruritic, more or less bilateral symmetrical, alopecic and erosive skin lesions over the entire body. There was edema of the ventral abdomen and preputium. Histopathological findings included hydropic degeneration and apoptotic keratinocytes at all levels of the epidermis. Possible initiating causes are discussed. The pony was treated with penicillin and prednisolone and full hair regrowth was seen within three months.

SAMENVATTING

Erythema multiforme wordt beschreven bij een Welsh Pony. De pony vertoonde plotse pruritus met min of meer bilateraal symmetrische alopecie met erosieve huidletsels over gans het lichaam. Er was oedeem van de buikwand en het preputium. De histopathologische bevindingen waren hydropische degeneratie en apoptotische keratinocyten in alle lagen van de epidermis. De mogelijke initiërende factoren worden besproken. De pony werd behandeld met penicilline en prednisolone en er was volledige haargroei binnen de drie maanden.

INTRODUCTION

Erythema multiforme (EM) is an acute cutaneous or mucocutaneous reaction pattern first reported in the horse in 1984 (Scott *et al*., 1984). Relatively few cases of erythema multiforme have been reported in horses (Scott *et al*., 1984; Scott *et al*., 1987; Scott, 1991; Marshall, 1991; Affolter and Von Tscharner, 1993; Scott and Miller, 1998).

Despite the recognition of multiple etiologic and triggering causes, the pathogenesis of erythema multiforme is not fully understood (Scott *et al*., 2000). It is currently hypothesized that EM represents a host-specific cell-mediated (T lymphocyte) hypersensitivity reaction directed toward various antigens (drugs, infectious agents, neoplasia, etc.) (Fritsch and Ellias, 1993; Fabbri and Panconesi, 1993). Immunohistochemical findings in skin lesions from dogs with EM and acute graft-versus-host disease were similar (Affolter *et al*., 1998). In humans, two major and overlapping subgroups are distinguished. EM minor is usually asymptomatic, the overlying hair coat is normal and there is no or only moderate mucosal involvement. EM major (Stevens-Johnson syndrome) is characterized by severe involvement of more than one mucosal site, and is often accompanied by extensive necrotizing skin lesions (Fritsch and Ellias, 1993; Fabbri and Panconesi, 1993; Scott *et al*., 2000).

Three main histopathologic patterns occur: pure dermal, mixed dermal-epidermal, and pure epidermal (Scott *et al*., 1984; Affolter *et al*., 1993). All three patterns may be seen in the same patient.

Treatment should be directed against the underlying disease, if it can be found (Fadok, 1995a; Scott *et al*., 2000). EM may run a mild course, spontaneously regressing within one to three months (Scott, 1988; Scott *et al*., 2000). However, severe vesiculobullous cases of EM require supportive care (Scott *et al*., 2000). The value of glucocorticoid therapy is questionable (Fadok, 1995a).

This report describes the occurrence of EM in a pony.

CASE REPORT

A 7-year-old chestnut Welsh Pony gelding was referred during the summer with a one- week history of acute pruritus and hair loss involving the entire body. The problem was first noticed five days after the pony received a rhinopneumonia booster vaccination. In addition, the owner reported possible ingestion of grass contaminated with road marking paint two days before the onset of clinical signs. Other horses with which it had been in contact in the field were unaffected. The owner had noticed depression, lethargy and poor appetite coinciding with the onset of the skin disease. Previous therapy from the referring veterinarian with systemic antihistamines and topical corticosteroids had no beneficial effect.

Clinical examination revealed generalized well-demarcated more-or-less symmetrical annular to polycyclic skin lesions consisting of erythema, erosions and alopecia (Figures 1 and 2). These skin lesions were covered with matted hairs, scales and crusts. There was a small ulcer, approximately 0.5 cm in diameter, present on the oral mucous membranes. There was marked edema of the ventral abdomen and preputium. The pony was afebrile (37.8 C) with normal heart rate (36 beats per minute) and respiratory rate (14 breaths per minute). Differential diagnoses included vasculitis, erythema multiforme, systemic lupus erythematosus, contact or insect hypersensitivity, cutaneous drug reaction, pemphigus foliaceus or infectious folliculitis due to bacteria, dermatophytes or dermatophilus. No ectoparasites or dermatophytes were detected on microscopical examination of skin scrapings and plucked hairs. Dermatophyte culture of hair pluckings of the affected areas was negative after 3 weeks inoculation on Sabouraud's dextrose agar. Routine hematology, blood biochemistry and urinalysis were all within normal limits. The histopathology of excisional skin biopsies removed from the lateral aspect of the neck and chest revealed multifocal areas of hydropic degeneration and apoptotic keratinocytes at all levels of the epidermis and follicular epithelium. The superficial dermis showed a marked edema with vascular dilatation and a mild infiltrate of mixed inflammatory cells including eosinophils. These findings were consistent with a presumptive diagnosis of erythema multiforme (Figures 3 and 4).

Because a significant proportion of the cutaneous surface was involved, the pony was hospitalized and supportive treatment was given under the form of intravenous fluids (Ringer's Lactate, Baxter). The presumptive secondary bacterial folliculitis was treated initially with penicillin G at 10 mg/kg given intravenously twice daily. To control the pruritus, oral prednisolone at 1 mg/kg once daily was started. The skin lesions were bathed with a 4% chlorhexidine (Hibiscrub, Schering-Plough Animal Health) solution once daily. Hydrotherapy twice daily was used to treat the edema. Within 48 hours the pony was much brighter, it was was eating well and there was an improvement of the edema. All intravenous treatment was terminated and intramuscular injections of procaine penicillin (Depocillin, Mycofarm Belgium) at 10 mg/kg every 24 hours for 5 days were started.

After one week the pony was no longer pruritic. There was a marked improvement in the erythema, and all erosions had healed. Bathing was discontinued. Nevertheless, the alopecic areas were enlarged centrifugally. After another week there was no deterioration of the alopecic areas (Figure 5). The prednisolone dosage was decreased and gradually withdrawn over the next two weeks. Three months after termination of the treatment, full hair regrowth was noted (Figure 6).

Revaccination one year later with the same brand of vaccine showed no adverse reactions. Three years later the pony remains normal.

DISCUSSION

Erythema multiforme should not be considered the definitive etiologic diagnosis, as it is a clinicopathological reaction pattern which encourages a thorough search for trigger factors, especially drugs and infectious agents (Fritsch and Ellias, 1993; Fadok, 1995a; Scott and Miller, 1998; Scott and Miller, 1999; Scott *et al.*, 2000). In man and the dog, EM is most commonly associated with drug administration and infections (Fritsch and Ellias, 1993; Fabbri and Panconesi, 1993; Scott and Miller, 1999). In the horse, drugs (trimethoprim-potentiated sulfonamides) are probably the most frequent inducers of EM (Scott, 1991; Fadok, 1995a; Scott and Miller, 2003). However, many cases are idiopathic (Scott *et al*., 1984; Scott, 1988; Affolter and Von Tscharner, 1993). In man, herpes simplex virus infection is a common precipitating agent (Tonnesen and Soter, 1979). Whether the herpes vaccine or the chemicals ingested by this pony played a direct or indirect role in the evolution of this disease remains speculative. Many of the [relatively few] cases in horses have been associated with the administration of vaccines, especially rhinopneumonitis (herpes virus) vaccine (Fadok, 1995b). Revaccination of the pony with the herpes vaccine the following year did not cause relapse of the condition. In most reports, drug-induced EM appears 1-2 weeks after treat-

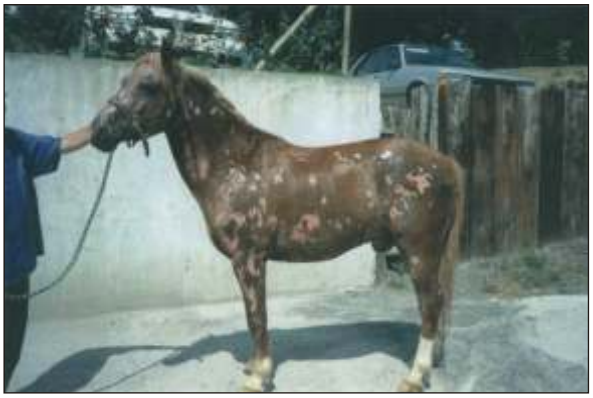

Figure 1. Generalized symmetrical alopecia and erosive skin lesions over the entire body. Note edema of ventral abdomen and preputium.

Figure 2. Closer view. Alopecic and erosive skin lesions.

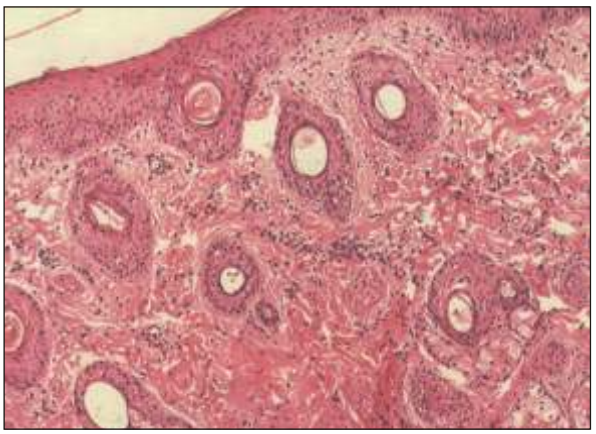

Figure 3. (H&E, x100) Edema of the superficial dermis with vascular dilatation and mild infiltrate of mixed inflammatory cells.

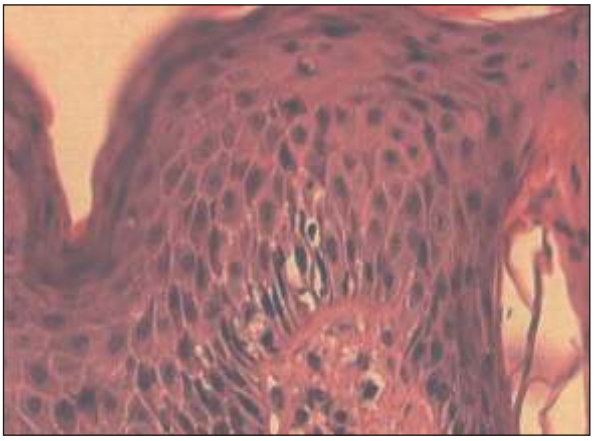

Figure 4. (H&E, x400) Apoptotic keratinocytes at all levels of the epidermis.

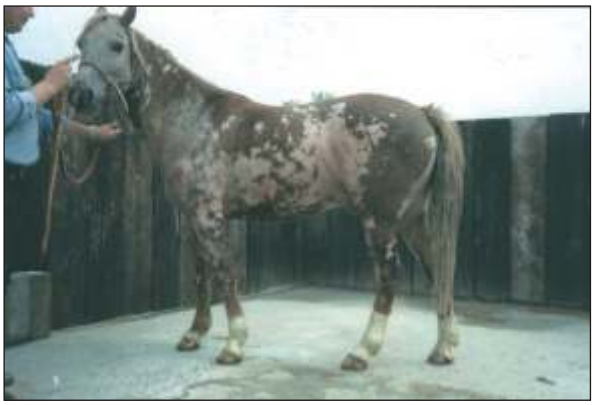

Figure 5. After two weeks of treatment. Note the alopecic areas are enlarged centrifugally.

Figure 6. Three months after termination of the treatment.

ment with the offending drug, and markedly improves within 1-2 weeks after discontinuation of the offending drug (Fritsch and Ellias, 1993; Scott and Miller, 1999; Scott *et al*., 2000). Idiopathic cases undergo spontaneous healing over a 3 to 4-month period (Scott *et al*., 1987; Marshall, 1991).

In horses, lesions are usually maculopapular or urticarial (Scott *et al.*, 1984; Scott *et al.*, 1987; Marshall, 1991; Affolter *et al.*, 1993; Scott and Miller, 1998). Occasionally they are vesiculobullous and/or ulcerative (Scott, 1991). To our knowledge, only two horses have been reported in the literature with painful necrotizing and ulcerative lesions (Scott and Mil-

ler, 1998). The intense pruritus seen in this case is rarely a feature of this disorder (Fadok, 1995a; Scott and Miller, 1999). Although treatment controlled the pruritus, the alopecic areas continued to spread outwards. This would indicate that treatment had no influence on the self-limiting course of the EM. Moreover, the marked edema of ventral abdomen and preputium in this pony, a feature more commonly seen with vasculitis, is usually not present with EM (Scott, 1991).

The histopathological findings were consistent with most previous reports of EM (Marshall, 1991; Affolter *et al.*, 1993; Scott *et al.*, 1998; Scott *et al.*, 1999; Scott *et al.*, 2000). The observation of apoptotic keratinocytes in equine histopathological specimens is significantly greater in EM, discoid erythematosus, systemic lupus erythematosus and photodermatitis (Macleod *et al*., 2004). The marked dermal edema, vascular dilatation and congestion are features more commonly seen in the urticarial lesions of EM (Scott and Miller, 1998). We could argue that primary maculopapular/urticarial lesions were not seen in this case due to the severe pruritus and self-trauma resulting in secondary erosions with alopecia.

The use of immunosuppressive drugs, especially glucocorticoids, in the treatment of erythema multiforme is controversial (Fritsch and Ellias, 1993; Scott, 1991; Fadok, 1995a). Treatment with immuno-modulating drugs, however, was recommended by Scott and Miller (1998) in horses with vesiculobullous, or necrotizing disease. Clearly this case benefited from treatment with glucocorticoids to control pruritus.

CONCLUSION

EM is a rare condition in horses and to the authors knowledge has not been reported in ponies. The pruritus and edema were unusual clinical presentations in EM.

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REFERENCES

Affolter V.K., Shaw S.E. (1993). *Advances in Veterinary Dermatology II*, New York: Pergamon Press, 447.

Affolter V.K., Von Tscharner C. (1993). Cutaneous drug reactions: a retrospective study of histopathological changes and their correlation with the clinical disease. *Veterinary Dermatology 4*, 79-86.

Affolter V.K., Moore P.F., Sandmaier B.M. (1998). *Advances in Veterinary Dermatology, 3rd ed*. Boston: Butterworth-Heinemann, 103-115.

Fabbri P., Panconesi E. (1993). Erythema multiforme ('minus' and 'maius') and drug intake. *Clinics in Dermatology 11*, 479-489.

Fadok V.A. (1995a). Overview of equine papular and nodular dermatoses. *Veterinary Clinics of North America 11*, 61-74.

Fadok V.A. (1995b). Update on four unusual equine dermatoses. *Veterinary Clinics of North America 11*, 105-110.

Fritsch P.O., Ellias P.M. (1993). *Dermatology in General Medicine, 4th ed*. New York: McGraw-Hill, 585-600.

Macleod K.D, Scott D.W., Erb H.N. (2004). The prevalence of apoptotic keratinocytes in equine epidermis: a retrospective study of skin biopsy specimens from 254 horses with non- neoplastic dermatoses. *Abstracts from the American Academy of Veterinary Dermatology and American College of Veterinary Dermatology, Veterinary Dermatology 15*, 199-206

Marshall C. (1991). Erythema multiforme in two horses. *Journal of the South African Veterinary Association 62*, 133-136.

Scott D.W., Walton D.K., Blue M.G. (1984). Erythema multiforme in a horse. *Equine Practice 6 (8)*, 26-30.

Scott D.W. (1988). *Large Animal Dermatology*, Philadelphia, W.B. Saunders, 319-321.

Scott D.W., Walton D.K., Slater M.R., Smith C.A., Lewis R.M. (1987). Immune-mediated dermatoses in domestic animals: ten years after – Part II. *Compendium on Continuing Education for the Practicing Veterinarian 9*, 539-553.

Scott D.W. (1991). Unusual immune-mediated skin diseases in the horse. *Equine Practice 13 (2)*, 10-18.

Scott D.W., Miller W.H.Jr. (1998). Erythema multiforme in the horse: Literature review and report of 9 cases (1988-1996). *Equine Practice 20 (6)*, 6-9.

Scott D.W., Miller W.H.Jr. (1999). Erythema multiforme in dogs and cats: literature review and case material from the Cornell University College of Veterinary Medicine (1988-96). *Veterinary Dermatology 10*, 297-309.

Scott D.W., Miller W.H., Griffin C.E. (2000). *Muller and Kirk's Small Animal Dermatology, 6th ed*. Philadelphia: W.B. Saunders, 729-740.

Scott D.W., Miller W.H. (2003). *Equine Dermatology*, St. Louis, W.B. Saunders, 475-547.

Tonnesen M.G., Soter N.A. (1979). Erythema multiforme. *Journal of American Academy of Dermatology 1*, 357-364.