

A Case Report of Eosinophilic Myositis in a Slaughtered Female Cattle

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Abstract: In this study, pathological, histopathological findings and slaughter judgment of a case of eosinophilic myositis in a mixed breed cow are described. In post mortem inspection, multifocal large irregular areas of greenish discoloration of various groups of skeletal muscles were seen. Representative samples of affected muscles were placed in 10% neutral buffered formalin, embedded in paraffin, sectioned at 4-6 μ m and stained routinely with hematoxiline eosin. Microscopically, examinations demonstrate that affected areas are severely infiltrated by a large number of eosinophils, fewer macrophages and lymphocytes.

Key words: Eosinophilic, myositis, cattle, abattoir, lymphocytes, examination

INTRODUCTION

Eosinophilic myositis is a type of myopathy that rarely can be seen in cows and calves at different ages at meat inspection after slaughter. Usually, lesions can be seen in skeletal and myocardial muscles in slaughtered animals (Kahn and Line, 2005; Wouda *et al.*, 2006). In this case, cow muscle has the local eosinophilic infiltration that the cause is unknown in some instances (Kahn and Line, 2005; Wouda *et al.*, 2006). But parasitic infections of striped muscles such as trichinosis, cysticercosis, toxoplasmosis and sarcocistis cause the severe leukocytosis in striped muscles with obvious eosinophilic infiltration (Jones *et al.*, 1997; Do *et al.*, 2008).

In macroscopic study, these lesions can be seen to greenish gray in skeletal muscles and rarely in cardiac muscles that they are fade when exposed to air (Stephan *et al.*, 1998; Kahn and Line, 2005). Consumption of animal meat with eosinophilic myositis is not harmful for human health (Atasever, 1998) and at post-mortem inspection; local rejection of infected areas and in acute contamination, total rejection of carcass will be done (Stephan *et al.*, 1998; Gracey *et al.*, 1999).

MATERIALS AND METHODS

In May of 2009, it was seen eosinophilic myositis in a 5 years old hybrid female cattle after the post-mortem inspection in Tabriz slaughterhouse. The lesions were as large greenish circular multifocal areas of 6-2 cm diameter in skeletal muscles of leg, thigh and shoulder. These

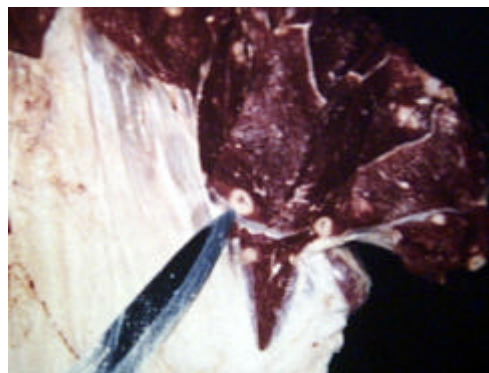


Fig. 1: Eosinophilic myositis in thigh muscles

focals were deep and they could be seen diffusely in muscles during cutting. Lowest involvement were in the shoulder muscles (an area) but larger focals and the highest involvements with smaller centers were observed in leg and thigh muscles (6 regions). Internal visceral did not show up any particular problem in the examination of slaughter (Fig. 1).

Damaged parts with healthy tissue with thickness of 1 cm were sampled and they were transferred to the pathology laboratory in 10% formalin buffer. Embedded in the molten paraffin and prepared microscopic sections in diameter 6-4 μ m, hematoxilin eosin staining was performed. In microscopic observations of prepared sections of tissues, degenerative changes and Zinker necrosis with specific edema and infiltration of eosinophile cells with single nuclear cells such as macrophages and lymphocytes and plasmacells were

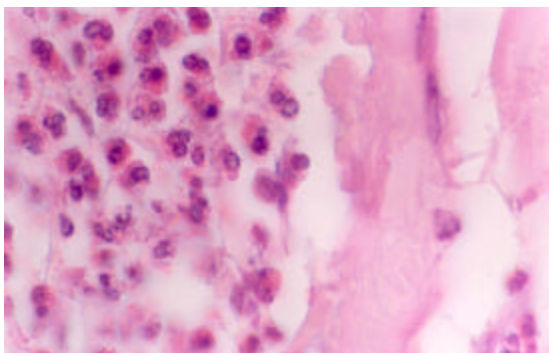


Fig. 2: Muscular fibrils surrounded by many eosinophiles containing red granules and some single nuclear cells (H and E x 100)

observed. Muscular myofibrils often have vacuolation in the tissue sections and specific edema caused rupturing of the muscular fibrils. Damaged areas severely were affected by a large number of eosinophiles, macrophages and lymphocytes but there were not any visible parasites in tissue sections (Fig. 2).

RESULTS AND DISCUSSION

Pervious reports about these disease and the focal, bright green colored muscular lesions in different sizes especially in triceps brachii muscle (Stephan *et al.*, 1998) and hindquarter muscles of beef cow (Wouda *et al.*, 2006) at meat inspection after slaughter, confirm our findings in the present study. Probably, there is a relationship between this disease and sarcocystis but it hasn't been proven yet because the most of lesions often are an immunological reaction to the undiagnosed parasites (Gracey *et al.*, 1999; Wouda *et al.*, 2006).

In rare cases of toxoplasmosis infections, observation of myositis is possible but polymyositis after *Toxoplasma gondii* infection usually occurs in dogs that it usually has necrotic multifocal lesions with degenerative changes and necrosis of muscular myofibrils. Infiltration of histiocytic cells with plasma cells and lymphocytes usually are very obvious in these lesions.

Most of the *Sarcocyst* species cysts in skeletal and heart muscles are visible without any inflammatory reaction and they are common in most domesticated animals but the infection with *S.ovicanis* causes bleeding in muscles and visceral organs of sheep. Also, a mild myositis with infiltration of histiocytic cells and plasma cells is completely visible (Jones *et al.*, 1997; Gajadhar and Marquardt, 1992).

CONCLUSION

Myositis might be due to the migration of parasites, especially sarcocysts (La Perle *et al.*, 1999) and there are the reports about similar lesions in regard to echinococcus and trematodes. Also, there may be observed a mild infiltration of lymphocytes and eosinophiles in cases of systicercosis. Non-infectious causes of the eosinophilic response are muscular rupture after striking or hypersensitivity reaction in muscle (Immunologic myositis) which is common in dogs (Kahn and Line, 2005). Also, microscopic studies show the rupture of muscular fibers and fascicles with perymysium and endomysium edema with severe eosinophilic infiltration in muscular myositis. Also, we sometimes can observe hyaline changes and vacuolization of muscular fibers. If muscular myositis be chronic, infiltration of macrophages and lymphocytes, fibrosis with myofibril calcifications are the other pathological findings in these cases (Jones *et al.*, 1997; Wouda *et al.*, 2006; Do *et al.*, 2008).

REFERENCES

- Atasever, A., 1998. Eosinophilic myositis in a cattle. Turk. J. Vet. Anim. Sci., 22: 93-95.
- Do, S.H., H. da Jeong, J.Y. Chung, J.K. Park, H.J. Yang, D.W. Yuan and K.S. Jeong, 2008. Eosinophilic myositis in a slaughtered Korean native cattle. J. Vet. Sci., 9: 425-427.
- Gajadhar, A.A. and W.C. Marquardt, 1992. Ultra structural and transmission evidence of *Sarcocystis cruzi* associated with Eosinophilic Myositis in cattle. Can. J. Vet. Res., 56: 41-46.
- Gracey, J.F., D.S. Collins and R.J. Huey, 1999. Meat Hygiene. 10th Edn., W.B. Saunders, Loanhead, Scotland, ISBN: 0 7020 2258 6, pp: 1-18.
- Jones, T.C., R.D. Hunt and N.W. King, 1997. Veterinary Pathology. 6th Edn., Wiley-Blackwell, New York, ISBN: 0683044818, pp: 1392.
- Kahn, C.M. and S. Line, 2005. The Merck Veterinary Manual: Eosinophilic Myositis in Cattle and Sheep. 9th Edn., Merck and Co. Inc., Whitehouse Station, New Jersey, USA., ISBN-10: 0911910506.
- La Perle, K.M.D., F. Silveria, D.E. Anderson and E.A.G. Blomme, 1999. Dalmeny disease in an alpaca (*Lama pacos*): Sarcocystosis, eosinophilic myositis and abortion. J. Comp. Pathol., 121: 287-293.
- Stephan, R., R. Tholen and D. Meier, 1998. Greenish discolorations of beef musculature and their assessment according the meat hygiene regulations. A case report. Tieraztl Prax Aug G Grosstiere Nutztiere, 26: 21-23.
- Wouda, W., J.J. Snoep and J.P. Dubey, 2006. Eosinophilic myositis due to *Sarcocystis hominis* in a beef cow. J. Comp. Pathol., 135: 249-253.