Scientific Report

The first report of abdominal mesothelioma in a ram in Iran

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Summary

Primary tumours arising from the mesothelial cells lining the peritoneal cavity, mesothelioma, have been recorded in the abdominal cavity of cattle, horses, dogs and cats. Abdominal tumour masses from a five-year-old male kordi sheep were found during routine inspection at the Mashhad abattoir. At gross examination, the tumour consisted of gray-white multiple firm, sessile nodules, approximately 2.60 kg in weight. Histopathological examination revealed numerous thin papillary projections covered by cuboidal cells with large vesicular nuclei and prominent nucleoli and in some areas the neoplastic cells lined cystic spaces. Mitotic figures were few. Based on histopathological findings, the tumour was diagnosed as abdominal mesothelioma.

Key words: Mesothelioma, Ram, Abdominal cavity, Tumour

Introduction

Mesothelioma is a rare tumour that arises from the serosa, sometimes termed malignant. It occurs with greatest frequency in cattle and dogs but has been reported occasionally in horses, cats, pigs and other species (Barker, 1993). Abdominal mesothelioma has been reported in cats (Raflo and Nuernberger, 1978; Umphlet and Bertoy, 1988), dogs (Craig et al., 1985; Forbes and Mathews, 1991), heifer (Vestweber et al., 1986), mare (Ricketts and Peace, 1976) and guinea pig (Wilson and Brigman, 1982). There is only one published report concerning mesothelioma in sheep (Brown and Weaver, 1981). Mesothelioma is of low grade malignancy so there is limited invasive growth. Metastases to regional lymph nodes are rare and distant metastases are very rare (Meuten, 2002). This report presents the gross and histopathological findings of abdominal mesothelioma, found in a ram during routine inspection at the Mashhad abattoir.

Case history

Tumoural masses from a five-year-old male Kordi sheep were submitted to the pathology section, School of Veterinary Medicine, Ferdowsi University of Mashhad. At gross inspection, the peritoneal cavity contained milky fluid. On the visceral surface of the peritoneum multiple grayish-white firm and sessile nodules were seen. The aggregated weight was 2.60 kg and their cut surface was firm and white. There was no evidence of other abdominal viscerae involvement. Tissue samples were fixed in 10% buffered neutral formalin, embedded in paraffin, sectioned at 5 μm and stained with (H&E).

Results

Microscopically, the tumour had numerous thin papillary projections that covered by cuboidal cells and supported by fibrovascular stroma. In some areas, there was a marked scirrhous response that isolated islands of neoplastic cell aggregates. In these areas, the neoplastic cells lined
cystic (tubular) spaces (Fig. 1). The neoplastic cells had large vesicular nuclei and prominent nucleoli. Mitotic figures were few. There was not any metastasis into the other organs. Based on histopathological findings, the tumor was diagnosed as abdominal mesothelioma.

Discussion

This rare neoplasm of the thoracic and peritoneal mesothelioma of human beings and most domestic animals is seen most commonly in calves, in which it can be congenital. In human beings, it has long been associated with asbestos exposure (asbestos mining, ship building), where with other factors, such as cigarette smoking, it is probably a cocarcinogen. No association between mesothelioma and asbestos has been made convincingly in domestic animals (Lopez, 2001). The etiology of the tumour in this report could not be ascertained. Peritoneal milky fluid which was seen in this case, can be caused by production of excessive peritoneal fluid by the neoplastic cells and occlusion of peritoneal lymphatics by the neoplastic cellular infiltrates (Jones et al., 1997). To eliminate a diagnosis of transcoelomic carcinoma metastasis, a careful examination of the genitalia and intestines for small malignant primary tumours must be undertaken. It is often possible to show that the tumour emboli are in subserosal lymphatic vessels unlike mesotheliomatous foci. Adenocarcinoma acini have uniform cells with basal nuclei set around an acinus. The cells may contain mucin but little or no glycogen (Meuten, 2002). In the present case, there was not any involvement of intestines or genitalia and histopathological features of the tumour cells were different from adenocarcinoma. On the other hand, there was not metastasis into the other abdominal organs in this case. Finally, this case illustrates that abdominal mesothelioma should be considered in the examination of sheep carcases at abattoirs and differentiated from hyperplastic or granulomatous lesions. The author believes this to be the first recorded case of abdominal mesothelioma in Iran.
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References


