PO-03

Malignant Schwannoma in F344 Rat

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Introduction

Schwannoma is a neoplasm of the Schwann cells of the neural sheath [1]. Malignant schwannoma is most commonly seen in the subcutis of the flank or neck area near the salivary glands [2]. It also occurs in the thoracic and abdominal cavities, spinal cord, cranial cavity, the heart, etc. Here, we incidentally found a good case of malignant schwannoma in the subcutis of the lumbar and lumbosacral region in male F344 rat during the carcinogenicity study with diisodecyl phthalate (DIDP). Therefore, we tried to report this case as a good reference of malignant schwannoma.

Materials and Methods

F344 rats were fed DIDP in diet at the levels of 0, 0.04, 0.2, and 0.8% (w/w) for 104 weeks for carcinogenicity study. This case was incidentally observed in the 0.2% DIDP treated group during study. For histological examination, all tissues were fixed in phosphate buffered 10% formalin, processed in routine manner for paraffin-section, and stained with hematoxylin & eosin. Additionally, the masses were immunostained for S-100, Smooth muscle cell actin and desmin using standard avidin-biotin technique.

Results

The lumbar vertebrae were flexured severely. Two white to gray edematous masses were observed in the subcutis of the lumbar and lumbosacral region. They were 16*14*8 mm, 25*17*8 mm in size, respectively and growing invasively. Histologically, they have a cystic or microcystic pattern with spindle or pleomorphic cells in a poorly stained edematous- or myxomatous-appearing matrix.

Immunohistochemically, the neoplastic cells were positive for S-100 but were negative for Smooth muscle actin and desmin. Based on the anatomical location and microscopic features of the neoplastic mass together with immunohistochemical results, the tumors were diagnosed as malignant schwannoma.

Discussion

Malignant schwannoma (neurilemoma, neurosarcoma) is most commonly seen as a gray or red mottled edematous mass in the subcutis of the flank or neck area near the salivery glands [2]. Benign schwannoma is typically encapsulated and the associated peripheral nerve may be seen in the microscopic section. This must be differentiated from neurofibrosarcoma and malignant neurilemoma [1]. In the subcutis, as in most other locations, schwannoma is generally considered malignant. Both Antoni type A (cellular pattern) and Antoni type B (sparse cellular pattern with cystic degeneration and xanthomatous changes) tissue patterns may be present in the same tumor. In some schwannomas, especially the small neplasms in the subcutis adjacent to the salivary glands, the pattern may be entirely Antoni type A [1,3]. Schwannoma with this appearance have sometimes been diagnosed as neurofibroma or neurofibrosarcoma, depending on the presence of invasion and cellular pleomorphism. Ultrastructural features of schwannoma cells include production of a variable amount of external lamina, abundant cytoplasmic organelles, and interdigitating cell processes. On the other hands, immunostaining of schwannoma for S-100 protein has produced variable results. Some schwannomas have clear positive staining, whereas others have only a few or no cells which are stained [1,4].

References

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