

ランチョンセミナー L2

[日時] 1月30日(木) 12:20 ~ 13:10

[会場] 3階 第1会議室 + 第2会議室 (サテライト会場)



[タイトル] **Overview on Spontaneous Proliferative Lesions and Induced Lesions in the Nervous System of Laboratory Animals**

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Abstract

Induced lesions in the central and peripheral nervous system of laboratory animals

Neurotoxicity includes effects of natural or synthetic products (neurotoxins), which alter the normal activity of the nervous system (NS). These changes can range from the interruption of structural activities to the death of cells that transmit and process signals in the brain or other parts of the NS. Neurotoxicology studies the adverse effects of chemical, biological and also physical products on the NS and/or the study of behavior during the evolution of the organism and its maturity. Specific regulatory guidelines include Delayed Neurotoxicity of Organophosphorus Substances Following Acute Exposure, OECD 418; Delayed Neurotoxicity of Organophosphorus Substances: 28-day Repeated Dose Study, OECD 419; Neurotoxicity Study in Rodents, OECD 424; Developmental Neurotoxicity Study, OECD 426. However, neurotoxicity may be also recorded in any other toxicology study.

Neurological symptoms can be acute or appear over time and include limb weakness, memory loss, intellectual disability, behavioral disorders (obsessive or compulsive), cognition problems, sexual behavior dysfunctions, etc. The clinical study of neurological disorders includes a series of functional tests, observation of clinical symptoms, assessment of locomotor activity, memory evaluation, sensory evaluation and motor coordination. In neuropathology, morphological histology techniques are applied including staining and histochemical/ immunohistochemical techniques, brain morphometry, and others.

This presentation explains, based on various examples, the value of different clinical methodologies (in vivo methods) and postmortem (basic and specific neuropathology techniques).

Spontaneous proliferative lesions of the nervous system in laboratory animals

Neoplasms of the nervous system (NNS) are by numerous pathologists and toxicologists considered to be a difficult topic. However, as lesions of other organ system, nervous system neoplasia implies rules consisting of diagnostic features, sex preference, location, or age at tumor growth onset.

NNS, whether spontaneous or induced, are infrequent rats and very rare in other laboratory animal species. The morphology of neural tumors depends on the intrinsic functions and properties of the cell type, the interactions between the neoplasm and surrounding normal tissue, and regressive changes.

The most common nervous system neoplasia in rats is the granular cell tumor, a neoplasm of the brain leptomeninges. Regarding sex preferences, in rats, granular cell tumors and glial tumors were found at higher incidences in males than in females. The spinal cord is rarely affected. Also, in the peripheral nervous system, generally a low number of neoplasms may be noted, mainly schwannoma. Other neural crest tumors may be recorded in the adrenal medulla, eye, skin and less common in ganglia etc.

The most important diagnostic feature on nervous system neoplasms depends on the expressed architecture within the neoplastic tissue. Immunohistochemical analysis is usually to confirm the diagnosis. The aforementioned architectures are usually structures of evidence.

The presentation provides an overview on NNS on different laboratory animal species as well as hallmarks of diagnostics.