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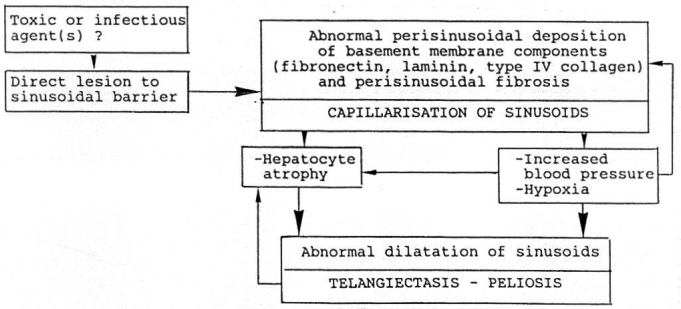

Table 1: Suggested pathogenesis of telangiectasis.

Res. *7*, 437. — *5. Jaeger A.* (1907): Arch. f. Wiss. u. Prakt. Tierheilk. *33*, 71. — *6. Jensen R.* et al. (1982): Am. J. Vet. Res. *43*, 1436. — *7. Monlux W. S., Monlux A. W.* (1972): «Atlas of Meat Inspection Pathology». Un. St. Dep. Agr., Washington D.C., U.S.A. — *8. Scoazec J. Y.* et al. (1988): Am. J. Pathol. *131*, 38. — *9. Soto J. A.* (1986): Proc. 14th World Congr. Dis. Cattle, Dublin, Ireland p. 856. — *10. Zafrani E. S.* et al. (1984): Am. J. Pathol. *114*, 349.

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TUMOR REGISTRY DATA BASE: ADVANTAGES USING A SYSTEMATIZED NOMENCLATURE

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In the development of new chemical or pharmaceutical products, long-term studies with laboratory rodents are required for the risk assessment of these substances. In order to evaluate and interpret the results of those studies by comparing the incidence and degree of pathological alterations in treatment groups with those in control groups, a fundamental knowledge of the frequency and type of spontaneously occurring lesions (in particular tumours) is necessary, because these lesions vary between different animal species and strains. The analysis of experimental data can decisively be improved by using a large pool of historical control data.

Scientists from a number of chemical and pharmaceutical companies and from research institutes have established a joint project to set up a computerized data base for the collection and evaluation of histopathological data from control rats of various strains. This REGISTRY data base is located at the Fraunhofer Institute of Toxicology and Aerosol Research in Hannover.

Besides data describing the maintenance and environmental conditions of particular studies, histopathological diagnoses of tumours and relevant pre-neoplastic lesions from rats used in carcinogenicity and toxicity studies are stored in the data base.

Significance of a systematized nomenclature

If historical data from control animals is to be used to improve the evaluation of study results, one major requirement must be taken into account:

Histopathological data which are not based on a systematized nomenclature cannot be used for any reliable statistical analysis.

One reason is that different names are often used in literature for lesions of the same histological type. On the other hand, however, the criteria which lead to a specific diagnosis are sometimes ambiguously defined in various textbooks or publications. In particular, if data are collected from different studies which are carried out at different laboratories and are evaluated by different pathologists, it is of significant importance to agree on a standardized nomenclature system. Needless to say, that a consistent nomenclature must also be used in any single experiment when summary tables of diagnostic findings are to be produced.

Another requirement for a pathology data base is the use of a generalized structure of a diagnosis.

The registry nomenclature and the structure of diagnoses

A diagnosis for the *registry* data base consists of many individual items which are all stored as separate entities in the system. The following information lists the main parts of a diagnosis:

the localization of the lesion
the name of the lesion
the biological behavior (e.g. malignancy) of the lesion
one or more modifiers
information about the multiplicity of a tumor.

The first step in starting the *registry* data base project was to standardize the usable names of organs and lesions and to build a hierarchical and highly uniform structure (Mohr et al., 1990). All terms are stored in the lexicon part of the data base and the data acquisition program controls their correct utilization.

The topography consists of 13 organ systems which are subclassified into organs and subtopographies. Lesions are divided into two categories: The first are specific to a distinct organ according to their site of origin and histogenesis and consequently can be used for diagnoses only for that particular organ. The second class of proliferative lesions are the so-called «generally used preferred terms» which can occur potentially in all organs, because they originate from connective tissue or other tissues distributed throughout the body.

Optionally, a diagnosis can be extended with one or more modifiers for a more precise subclassification e.g. to define a specific growth pattern of a lesion or to subdivide a finding into various cell types.

Information about the biological behaviour is necessary in order to classify a tumour as benign, malignant, metastasizing, invading, etc. or as a metastasis. Special rules are defined for using these terms in placing a finding.

A possible multiplicity of a tumour of the same type and histogenesis is another important type of information to be stored in the data base.

Additional information about the staining method and other technical procedures are also recorded for each finding.
Standardization of names is just one prerequisite for a systematized nomenclature. A similar important requirement is the use of the same diagnostic criteria to characterize a specific lesion. Detailed descriptions and definitions for all tumors and pre-neoplastic lesions in all organ systems have been worked out by a team of 25 pathologists. Those manuscripts include definitions about the light microscopic features and criteria for the differentiation of hyperplastic lesions, benign tumours and malignant tumours.
In the *registry* data base there are actually two nomenclature systems: In the first system all topographical parts in common lesion names are stored consequently as subtopographies and the lesion name consists only of the morphological classification. The second preserves the more popular structure of lesion names (e.g. WHO nomenclature) to allow an easy data transfer from other pathology software systems to the data base. For example, the diagnosis «adenoma, follicular cell» in the organ «thyroid gland», is stored in this form using the second nomenclature system. In the first system, the diagnosis is translated to «adenoma» which is stored under the subtopography «thyroid, follicle». Both nomenclature systems are set up in a way that a translation in both directions can be performed automatically.
The hierarchical structure of the systematized nomenclature systems makes it very easy to perform different kinds of computerized data evaluation. Incidence reports for example can be produced on various «topographical levels»: The incidence of a particular tumour can be summarized for a whole organ system, for a single organ, including all related subtopographical sites, or for a single subtopography. In those reports, modifiers can be included to give more detailed information on a growth pattern. The multiplicity of tumours can be taken into account if necessary for a particular data evaluation.

Literature

1. Mohr U. et al.: Exp. Pathol. *38*, 1–18.

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ENDOGENOUS LIPID PNEUMONIA, A NEW TYPE OF PNEUMONIA IN BIRDS: A POSSIBLE MODEL IN HUMAN CHOLESTEROL PNEUMONIA RESEARCH?

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Endogenous lipid pneumonia, foam-cell pneumonia, is characterized by large accumulations of foamy macrophages within alveoli. The disease is encountered in man, laboratory rodents, cats, rarely in dogs. The etiopathogenesis is not yet fully understood. For the first time endogenous lipid pneumonia is described in budgerigars and hummingbirds. Obesity and circulatory resistance will be discussed in this connection as possible causes.

Material and methods

During 1988–1989 in eleven budgerigars from different owners and in two hummingbirds from the Basle Zoological Garden we suggested macroscopically an endogenous-lipid pneumonia. Tissues were prepared as usual. Routine bacteriological cultures were made from lung, spleen and liver. Hematology and blood chemistry were not worked up.

Results

The eleven adult budgerigars were either obese (six), normal (three) or underweight (two); the two hummingbirds were slightly underweight. Grossly, the lungs had bilateral multiple irregularly distributed white, in severe cases more yellowish, firm foci. Most of the foci were subpleural and appeared as sharply defined, extended parabronchi. A marginal emphysema and generalized congestion were common. The filled parabronchi, the emphysema and the congestion rendered the lung swollen. A viscid milky fluid exuded from the cut surface.
Histologically, the bulk of the lesions was composed of distended parabronchi and alveoli filled with large, foamy macrophages. The cytoplasm was SUDAN-positive, less PAS-positive. There was only a small amount of interstitial fibrosis and accumulation of lymphocytes and plasma cells. In severe cases regions of alveolar type II cell proliferation as well as hypertrophic parabronchiolar muscles were prominent. Cholesterol crystals and giant cell granulomas were estabilished in the obstructive pneumonia.
In eight birds the cause of death was a tumour in the abdominal cavity: leucosis (spleen, liver), reticulo-SA (spleen), fibro-SA (spleen, 2), cholangiocyst-CA (liver), lipo-SA (liver), lipoma (abdominal cavity), non-differentiated ovary tumour. A marked liver cirrhoses in two cases and a generalized arteriosclerosis in one bird had affected the circulatory.

Discussion

For the first time endogenous lipid pneumonia is described in birds. The endogenous lipid pneumonia is a typical alveolar filling disorder. The causes are not yet clearly defined. In man and mammals, the accumulation of alveolar macrophages is associated with bronchitis or obstruction of alveolar clearance, either intrinsically by a tumour or extrinsically from compressing lymphnodes. Excessive production of macrophages and reduction of their mobility by ingested surfactant or serum-derived lipids are further causes. Also the acellular pulmonary alveolar lipoproteinosis may evolve through an endogenous-lipid pneumonia, almost desquamative in type.
Several causal influences may be postulated in the etiology in birds: – Six of the eleven budgerigars were obese. An increased number of foamy cells was found in lungs of rats that had been fed diets rich in cholesterol or triglyceride. – A pathological surfactant has also been described. Cholesterol is able to deactivate normal surfactant. – Tumours in the abdominal cavity, arteriosclerosis, liver cirrhosis as well as the obesity are factors which increase blood pressure. In rats,