

DIFFERENTIAL DIAGNOSIS OF LYMPHOID AND MYELOID TUMORS IN THE CHICKEN

Slide study set # 27

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Abstract

This slide set and associated text is to assist diagnosticians and veterinary pathologists in making accurate diagnoses of field cases in chickens where lymphoid or myeloid tumors are suspected. Lesions and other diagnostic features that distinguish Marek's disease (MD), lymphoid leukosis (LL), myeloid leukosis (ML) and the bursal and nonbursal lymphomas associated with reticuloendotheliosis (RE) are discussed and illustrated. Differentiation of these neoplasms from nonneoplastic syndromes and assorted other tumors is also discussed. Emphasis is placed on diagnostic strategies rather than specific procedures.

A system is proposed by which a diagnostic case is first assigned to one of four clinical types based mainly on gross lesions and age. This approach reduces the number of possible conditions to be considered, thus simplifying the process.

Differential diagnosis continues to be based primarily on gross and microscopic lesions. Additional tests of proven value for diagnosis include determination of T-cell and B-cell frequency and, if retrovirus tumors are suspected, demonstration of clonal insertions adjacent to the *c-myc* oncogene. Tests for specific viruses or their antibodies have only limited value, but can be adjuncts to other methods in some cases. Several additional tests with potential value are presented to encourage further development and field testing by reference laboratories. Some unpublished data relevant to diagnosis is presented in summary form.

Purpose and Scope

This documentation and slide study set is to provide a conceptual basis for the differential diagnosis of lymphoid and myeloid tumors in chickens and may also serve as a teaching aid. It is directed primarily to the academician although students and field veterinarians should also find the information useful. No

attempt is made to illustrate all lesions associated with tumor virus infection in chickens as this is considered in other slide sets. Tumors of other avian species, including turkeys and quail, are not discussed here.

An attempt is made to discuss diagnostic methods on two levels. **Standard criteria (level 1)** are based on gross and histological lesions which can be ascertained by virtually all diagnostic laboratories. **Advanced criteria (level 2)** involve more specialized techniques and, in some cases, may require the assistance of reference laboratories. The detection of virus, viral antigens or their antibodies is a subset of advanced criteria. Whereas standard criteria may be suitable for presumptive diagnosis in many cases, advanced criteria may be needed to establish a definitive diagnosis.

Introduction

Lymphoid tumors (lymphomas) occur commonly in chickens, usually the result of infection with Marek's disease virus (MDV), avian leukosis virus (ALV) or reticuloendotheliosis virus (REV). The lesions induced by these viruses differ in various respects and, in most cases, constitute unique diseases. Myeloid tumors occur most commonly in meat-type chickens, frequently as the result of infection with ALV subgroup J (ALV-J).

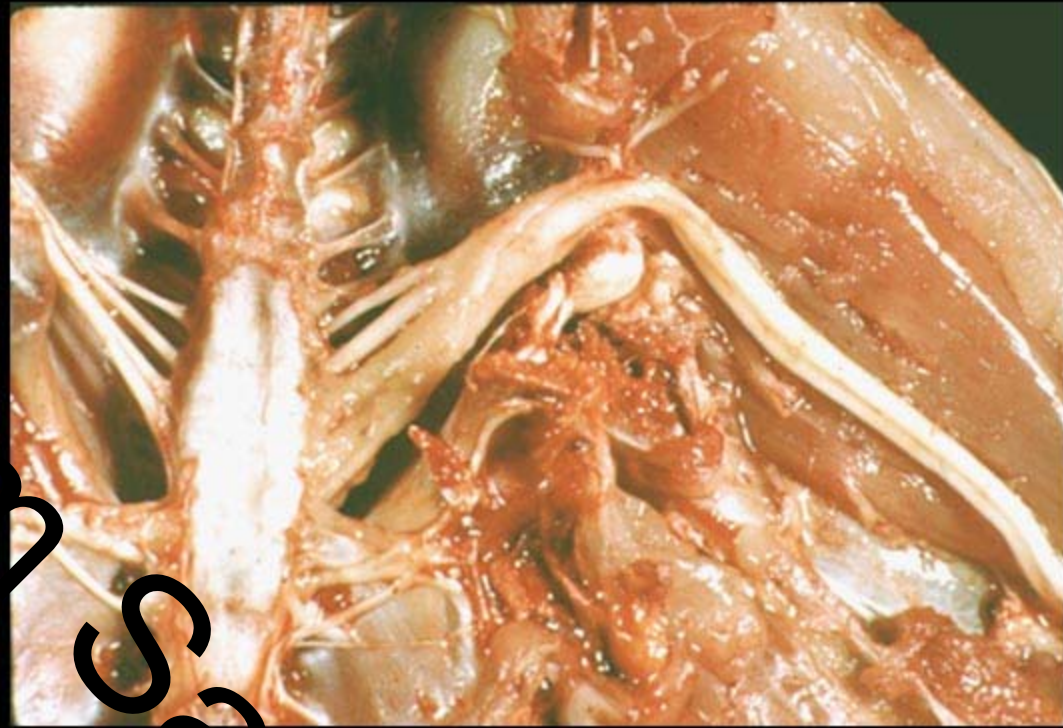
Lymphoid and myeloid tumors are economically important to commercial poultry management and have been studied extensively. When these tumors occur in the field, a specific diagnosis is important so that disease incidence can be monitored and appropriate control measures instituted. In some cases, a specific diagnosis is needed to determine liability for losses.

The diagnosis of lymphomas is fundamentally different from the diagnosis of many other diseases of chickens. It is also more difficult, a fact often underappreciated by pathologists. There are several reasons. The tumors are caused by three distinct virus types, of which at least two consist of multiple

1 – MD Nerve



Enlarged vagus (From L. Dudnikov)

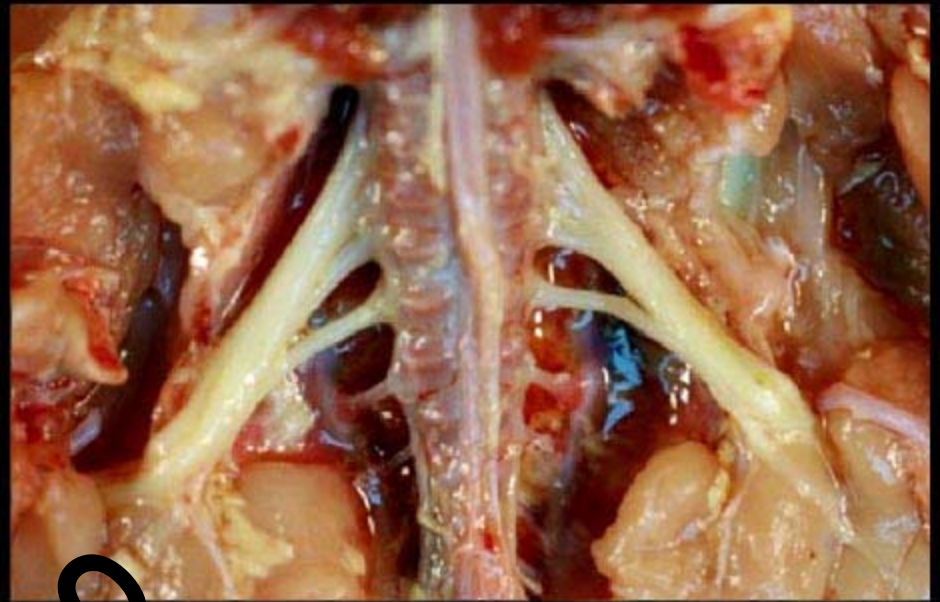


Unilateral enlargement
sciatic plexus



Swollen
Dorsal root
ganglia

2 – PN Nerve



Enlarged sciatic



Enlarged vagus (top 4)

Normal vagus

3 – RE Nerve



Enlarged vagus

Normal vagus

4 -- MD Tumor

