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Reduced fertility in aging roosters due to retained spermatozoa in sertoli cells

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Following artificial insemination, the rooster's fertility peaks at 96% by 32 weeks of age, declines to 75% by 70 weeks and to only 20% by 110 weeks of age. In previous studies, we found that the reduction of fertility was concomitant with a decrease of both ejaculated sperm concentration and plasma testosterone concentration.The present study examined: (1) the development of spermatogenetic cells and their relation with Sertoli cells that support them within the testicular seminiferous tubules; and (2) the functioning of Leydig cells that produce and secrete testosterone. Roosters aged 32, 70 and 110 weeks of age were compared using light and electron-microscopy. We found that the decrease of testosterone plasma level of the aging, low fertile roosters was characterized by Leydig cells showing reduced: Number and volume of mitochondria, where testosterone biosynthesis is initiated by cholesterol cleavage; rough endoplasmic reticulum involved in protein synthesis and smooth endoplasmic reticulum involved in testosterone secretion. However, spermatogenesis remained normal and the cells showed regular ultra-structure. The reduced output of spermatozoa from the testes was caused by their retention by Sertoli cells within the seminiferous tubules. These Sertoli cells lost their actin-like filaments which are involved in spermiation in the fertile rooster. We concluded that the low fertility of aging roosters was related to reduce testosterone levels which resulted in impaired spermiation due to actin-like filament deficiency of the Sertoli cells.

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Modern cytological diagnosis of malignant lymphomas

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The aim of our study was to determine the possibilities of cytological method in combination with the method of flow cytometry in the diagnosis of lymphoma and its immunophenotyping.

Material for the study served as a fine-needle aspiration biopsy of the lymph nodes of the patient 243 made under the control of ultrasound. Some cellular material stained with azure-eosin mixtures and subjected to routine cytology. Most of the cellular material was used for flow cytometry and immunocytochemistry. Immunophenotyping was performed by flow cytometry FACS Calibur firm Becton Dikinson, USA. Cell suspensions were stained with antibodies 2- and 3-color fluorescent markers. For tipirovpaniya lymphomas using the following panel of antibodies: CD3, CD4, CD5, CD7, CD8, CD10, CD15, CD19, CD20, CD21, CD23, CD30, CD34, CD38, CD43, CD45, CD56, CD57, CD79a, CD138, HLA- DR, FMC-7, TdT, immunoglobulin light chain kappa and lambda. Immunocytochemistry was performed by Ultra Vision using antibodies: bcl-2, Cyclin D1, Ki-67, EMA. Total contact cytologically diagnosed with non-Hodgkin's lymphoma in 243 patients. Carrying immunophenotyping by flow cytometry possible to determine B-cell lymphoma in 228 cases: 90 of them-follicular lymphoma, 17-B-cell lymphoma of the small lymphocytes, 6-mantle cell lymphoma, diffuse large 112 B-cell lymphomas, 3-MALT-lymphoma. T-cell lymphoma was observed in 15 patients of whom at 8-cell lymphoma with immunophenotype of peripheral T lymphocytes, 7-anaplastic large cell lymphoma). The combination of cytology methods with flow cytometry and immunocytochemistry can not only quickly and safe for the patient to establish the diagnosis of lymphoma (accuracy-98%) but its immunophenotype defining further treatment and prognosis of the disease (accuracy-90%).

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