

## THE IMPORTANCE OF CYTOMORPHOLOGICAL TEST TO THE SHEEP AND HORSE LYMPH NODES

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### Abstract

*The authors present a work which combines harmonious the fundamental theoretical aspects of normal and pathological lymph node cytology to sheep and horse, with practical aspects frequently seen in slaughterhouse. Thus, we reveals the relation between some diseases with chronic evolution who generate hyper-antigenic reaction bood (like major parasitic diseases: fasciolosis, dicroceliosis, echinococcosis, trichinosis) and the cytomorphological lymph node changes.*

*It presents the normal aspects of limph nodes cytology compared with the changes that arise from acute inflammation, repetitive chronic inflammation (who generating hyper-antigenic reaction) and malignant lymphoma vera", capturing the state of thalignant prelimfom"too, and we called „BORDER STATES".*

**Key words:** cytomorphological, horses, lymphnode, lymphoma, sheep.

### INTRODUCTION

In 1982 prof. G Simu published in his book, named *Malignant haemopathy*, about the concerns of some romanian researchers about this subject to human and animals. (15, 16, 17) Thus, the "malignant prelimfom" term in humans and animals, appeared in literature, for the first time, in the early 50s of last century, thanks of Rubin Popa exceptional works. In the same period, Dudea C. and Macavei (2, 7, 8), communicated studies about the transformation of repetitive chronic inflammatory states into malignant lymphoma and/or leukemia. After 10 years later, Stefan Berceanu and John Moraru shows, clinically and experimental, the relationship between hyperimmunization - hyperstimulation of limph structures - malignant lymphoma. (10) Also, during the same period, eminent personalities of the international medical like R. Gatti, Lennert K., R. Lukes, JI Miller, PK Schauer, Robbins SL, Nathwani BW and T. Radaszkiewicz elaborate scientific papers about the same

thing like romanian researchers. (3, 4, 5, 6, 11, 12, 13, 14)

In the 80s and 90s, the issue of "border states" between the repetitive chronic inflammation states and the onset of malignant lymphoma in lymph nodes, was amply presented by Nicolae Manolescu, and in 2000 year, in a doctoral thesis, was demonstrated that the same thing is true for the relationship between leukemia or leukemia-like states and triggering of leukemia statuses "vera". (1, 9)

### MATERIALS AND METHODS

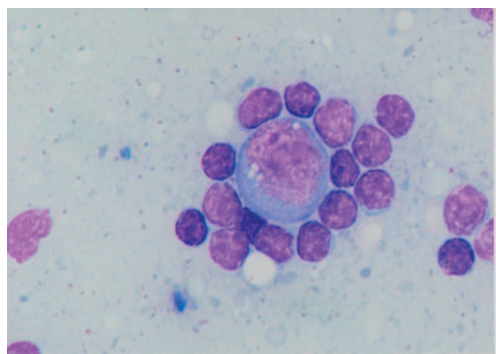
For the development of this study were collected and analyzed samples from 104 horses and 154 sheep, and equine trichinosis test was made too. The examination of organs and limph nodes revealed the massive presence of severe lung and liver echinococcosis lesions, both the sheep and the equine, structures adjacent like tracheo-bronchial, mediastinal, mesenteric lymph nodes was strongly affected from the size (severely lymphadenopathy) and the structure

(disappearance specific polymorphism). In some cases, we meeting similar changes of prescapular and / or popliteal lymph nodes. From lymph nodes with lesions, specifically from „lymph juice” we made smears. After drying of them, we performed panoptic staining used May-Grunwald Giemsa method. Interpretation of cytological smears on a microscope was made in biocular Olympus, initially using a zoom 400X and then 1000X. For each case, on the adenogramme basis, we made, firstly, „the blast score”, which was expressed as a percentage, and then we set that was present cellular atypia or mitotic division.

## RESULTS AND DISCUSSION

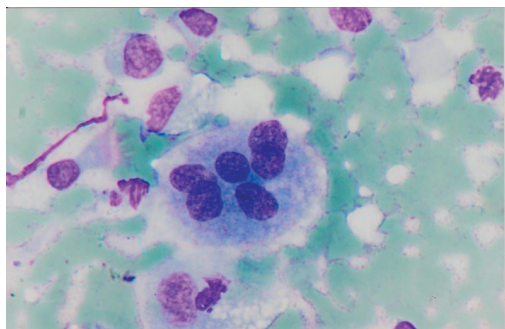
In the *sheep*, the "blast score" parameters of the adenogramme were:

- A. In physiological state, the adenogramme expressed a „blast score” who varied from a „microscopic field” to another between 0-5%, without cellular atypia or mitotic division (fig. 1);



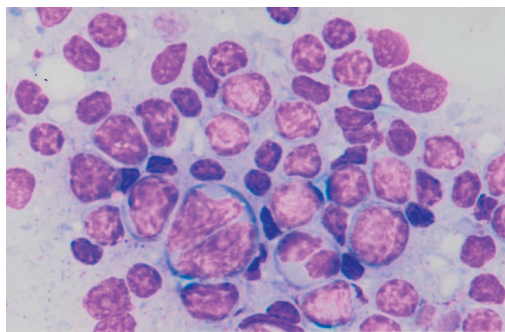
**Fig. 1.** Lymph node, normal cytological aspect with the present of a blast cell, MGG stain X1000

- B. In a chronic inflammatory process, the „score blast” is about 5-15%, missing the cellular atypia and mitotic division easily detectable (fig. 2);

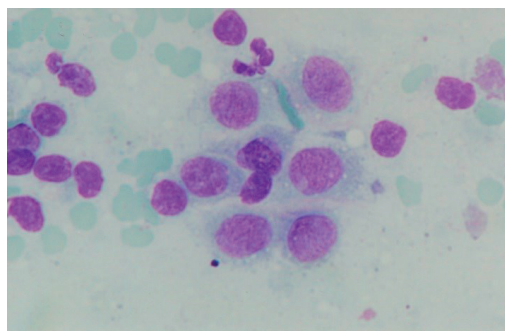


**Fig. 2.** Lymph node, the cytological aspect of the chronic inflammatory process – giant cell of „foreign body”, MGG stain X1000

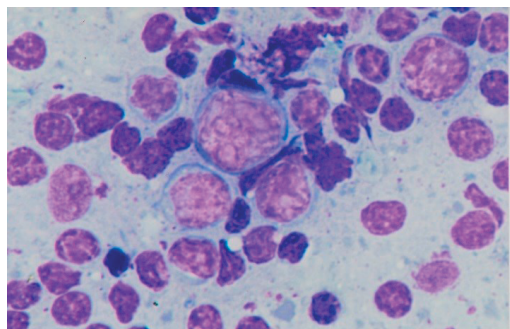
- C. In a borderline like „BORDER STATE” (malignant prelymphoma) the „blast score” varied between 20 – 50%, with cellular atypia and mitotic division (fig. 3, 4, 5, 6, 7, 8, 9);



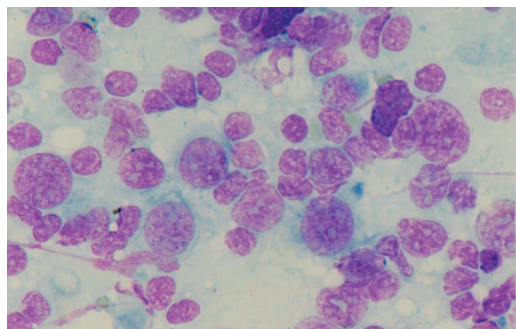
**Fig. 3** Lymph node, numerous blast cells and cellular atypia in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000



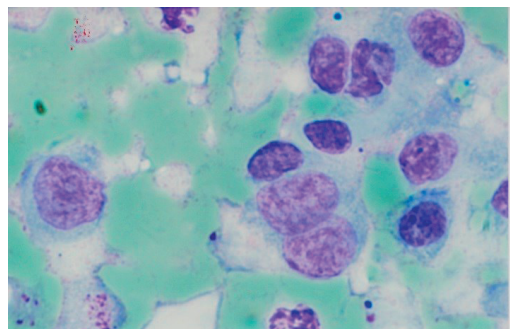
**Fig. 4** Lymph node, numerous blast cells in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000



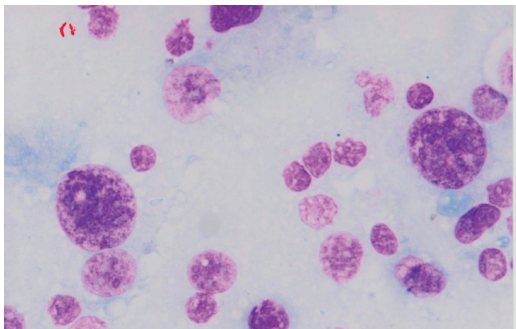
**Fig. 5** Lymph node, blast cells in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000



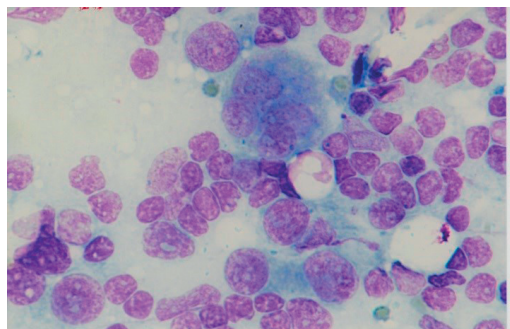
**Fig. 8** Lymph node, the present of blast cells and cellular atypia in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000



**Fig. 6** Lymph node, the present of mitotic cells and cellular atypia in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000



**Fig. 9** Lymph node, blast cells in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000



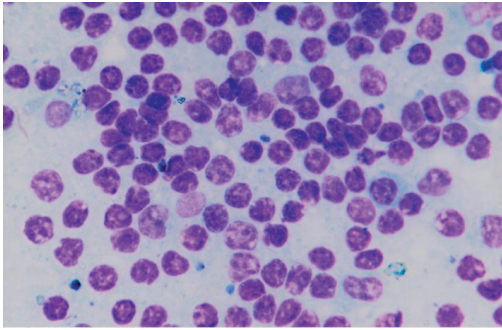
**Fig. 7** Lymph node, the present of mitotic cells and cellular atypia in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000

D. In a malignant lymphoma "vera", the "blast score" was over 50%, with very frequently cellular atypia and mitotic divisions;

In the *horse*, the "blast score" parameters of the adenogramme were:

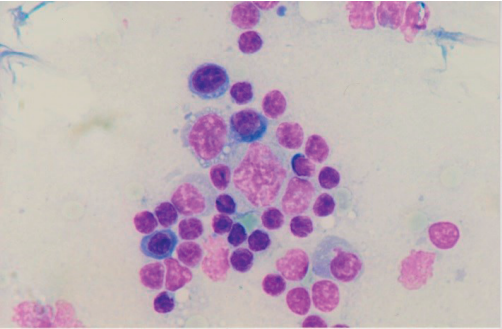
A. In physiological state, the „blast score” varied between 0-6%, without cellular atypia or mitotic division (fig. 10)





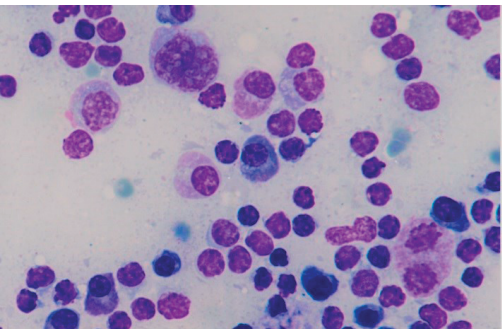
**Fig. 10.** Lymph node, normal cytological aspect, MGG stain X1000

B. In a chronic inflammatory process, the „score blast” is about 7-10%, missing the cellular atypia and mitotic division easily detectable (fig. 11);



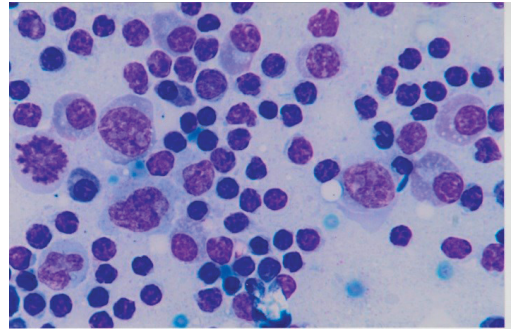
**Fig. 11.** Lymph node, the cytological aspect of the chronic inflammatory process, MGG stain X1000

C. In a borderline like „BORDER STATE” (malignant prelymphoma) the „blast score” varied between 10 – 20%, with cellular atypia and multiple mitosis; (fig. 12, 13, 14, 15, 16);

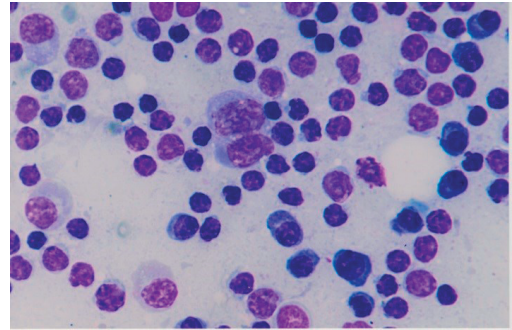


**Fig. 12** Lymph node, the present of blast cells in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000

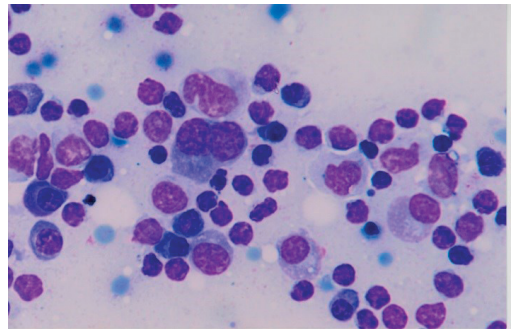
**Fig. 13** Lymph node, the present of numerous blast cells in the „BORDER



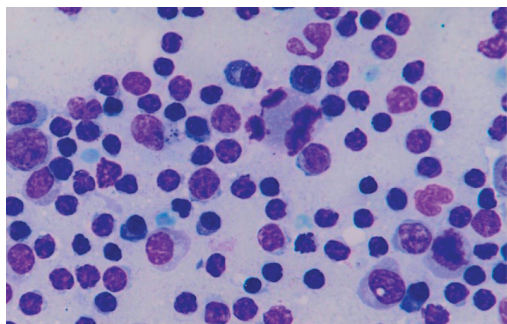
STATE” (malignant prelymphoma), MGG stain X1000



**Fig. 14** Lymph node, the present of mitotic cells in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000



**Fig. 15** Lymph node, the present of mitotic cells and cellular atypia in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000



**Fig. 16** Lymph node, the present of mitotic cells and cellular atypia in the „BORDER STATE” (malignant prelymphoma), MGG stain X1000

D. In a malignant lymphoma "vera", the "blast score" was between 20-25%, with masive cellular atypia and very frequently mitotic divisions;

The analysis revealed the following situations:

- the Pathological background of the slaughtered animals was of a serious chronic parasitic disease that affect the liver and the lung that has created a massive blood hyper-antigenic state;
- in the absence of appropriate therapies against echinococosis in sheep and horses, the animal body, including lymph node adjacent structures, reacted very intense;
- perpetual hyper-antigenic state incommensurable to the limph nodes determine a normal reaction accompanied by an intense cytoproliferation with functional cytomaturations normals, without ellular atypia and with rare mitotic divisions;
- at a time, in some studied animals (16% sheep and 23% horses), perpetual hyper-antigenic states blocked the cytomaturation phenomenon allowing to the cytoproliferation phenomenon to have a full expression;
- The consequence of this new phenomenon translated, cytomorphological, by intensifying the cellular divisions, the appearance of the cellular atypia with monstrosities

and unequivocal expression of the phenomenon of "blast". Reaching this moment can attract, in a different time, the malignancy of the reactive lymph node causing a malignant lymphoma "vera".

There not could be more important in a scientific research than you can achieve an arc of time (about 60 years), by the first work of Rubin Popa who spoke about the relationship between chronic inflammation repetitive and malignant lymphoma, obviously on a perpetual hyper-antigenic state background.

## CONCLUSIONS

Through a simple cytomorphological method was demonstrated, under natural conditions, the existence of a direct relationship between repetitive chronic inflammation and the possibility of developing a malignant lymphoma.

It revealed the decisive involvement of majore parasitic diseases like fasciolosis, dicroceliosis, echinococcosis, trichinosis in creation of a high level of a permanent hyper-antigenic state in blood as a point of developing a malignant lymphoma.

The necessity to apply, in veterinary medical practice, the cytomorphological adenogramme to establish the simple "blast score" or with cellular atypia or mitosis to establish the border state in the development of malignant lymphoma.

The importance of malignant lymphoma prevention in humans and animals by the treatment of parasitic diseases, thereby hindering the initiation of the continue hyper-antigenic state wich is responsible for producing cancer.

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