

# Peripheral nucleated red blood cells in a cat

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## Signalment

Chicca, 2 years old, neutered female, domestic shorthair cat

## History

Chicca was presented to the emergency service for severe depression. The owner found the cat in lateral recumbency after being trapped in a mosquito net on a terrace in a sunny summer day. There was no history of recent illness.

## Clinical findings

On presentation the cat was markedly depressed and showed severe bradycardia and hyperthermia (rectal temperature= 42°C). She also had severe hypotension (SAP 80 mmHg).

## Laboratory findings

Blood samples were sent to the clinical pathology laboratory of the Department of Veterinary Medical Sciences of the *Alma Mater Studiorum* - University of Bologna, Italy. Venous blood gas analysis showed a severe mixed acidosis with mild hyperlactatemia.

According to the hematological analysis, performed with a Siemens ADVIA 2120 analyzer, Chicca had an increase in the hematocrit, thrombocytopenia and a mild leukocytosis with lymphocytosis and basophilia (Table 1; Fig. 1; Fig. 2). On a May-Grünwald Giemsa stained blood smear no platelet clumps were seen. Numerous nucleated red blood cells (NRBC)(32NRBC/100WBC), mainly metarubricytes, and only few polychromatophils were present (Fig.3; Fig. 4). The basophilia was excluded while the lymphocytosis was confirmed by manual differential count (Table 2).

The serum chemistry profile showed a severe increase of AST activity but only a mild increase in ALT activity, while total bilirubin concentration was WRI. Serum creatinine and urea concentrations were just above the upper reference limit while phosphate was slightly decreased. Hypernatremia, hyperchloremia were also present.

Coagulation tests revealed a mild increase in activated partial thromboplastin time.

Table 1: results of the hematological analysis.

	Result	Unit	Reference Interval
Hgb	16.7	g/dL	10.0-16.0
Hct	49.0	%	32.0-48.0
RBC	10.44	$\times 10^6$ cells/mm <sup>3</sup>	7-11
MCV	46.9	fL	36.0-55.0
MCHC	34.0	g/dL	31.0-36.0
Platelet	72	$\times 10^3$ cells/mm <sup>3</sup>	150-500
MPV	16.2	fL	8.0-26.0
WBCB	18550	cells/mm <sup>3</sup>	4800-14930
WBCP	18850	cells/mm <sup>3</sup>	4800-14930
Neutrophils	21	%	
Lymphocytes	74.2	%	
Monocytes	1.2	%	
Eosinophils	1.1	%	
Basophils	2.4	%	
LUC	0.1	%	
Neutrophils	3890	cells/mm <sup>3</sup>	
Lymphocytes	13760	cells/mm <sup>3</sup>	900-5600
Monocytes	220	cells/mm <sup>3</sup>	0-650
Eosinophils	200	cells/mm <sup>3</sup>	1600-10000
Basophils	450	cells/mm <sup>3</sup>	
LUC	30	cells/mm <sup>3</sup>	
Reticulocytes	68100	cells/mm <sup>3</sup>	

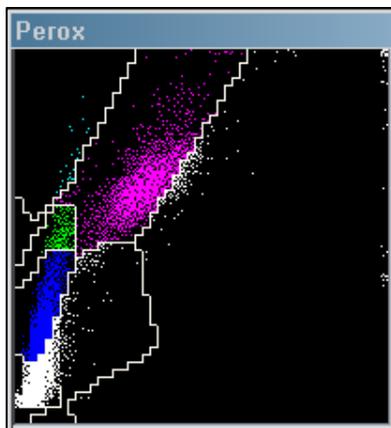


Figure 1: Perox channel cytogram.

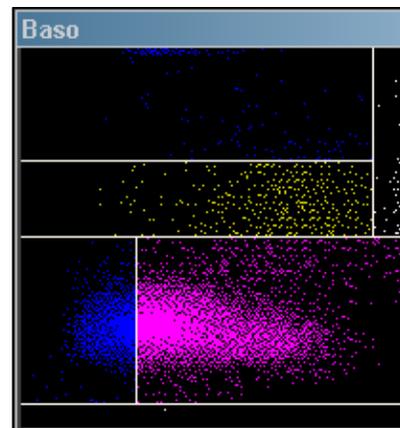


Figure 2: Baso channel cytogram.

**Table 2: Results of the manual differential WBC count.**

	%	cell/ $\mu$ L
WBC corrected		13759
Neutrophils	27	3872
Lymphocytes	68	9336
Monocytes	5	551
Eosinophils	0	0
Basophils	0	0
37 NRBC/100 WBC		

Figure 3: A rubricyte (upper right) and a metarubricyte in the blood smear. May Grünwald-Giemsa (100x).

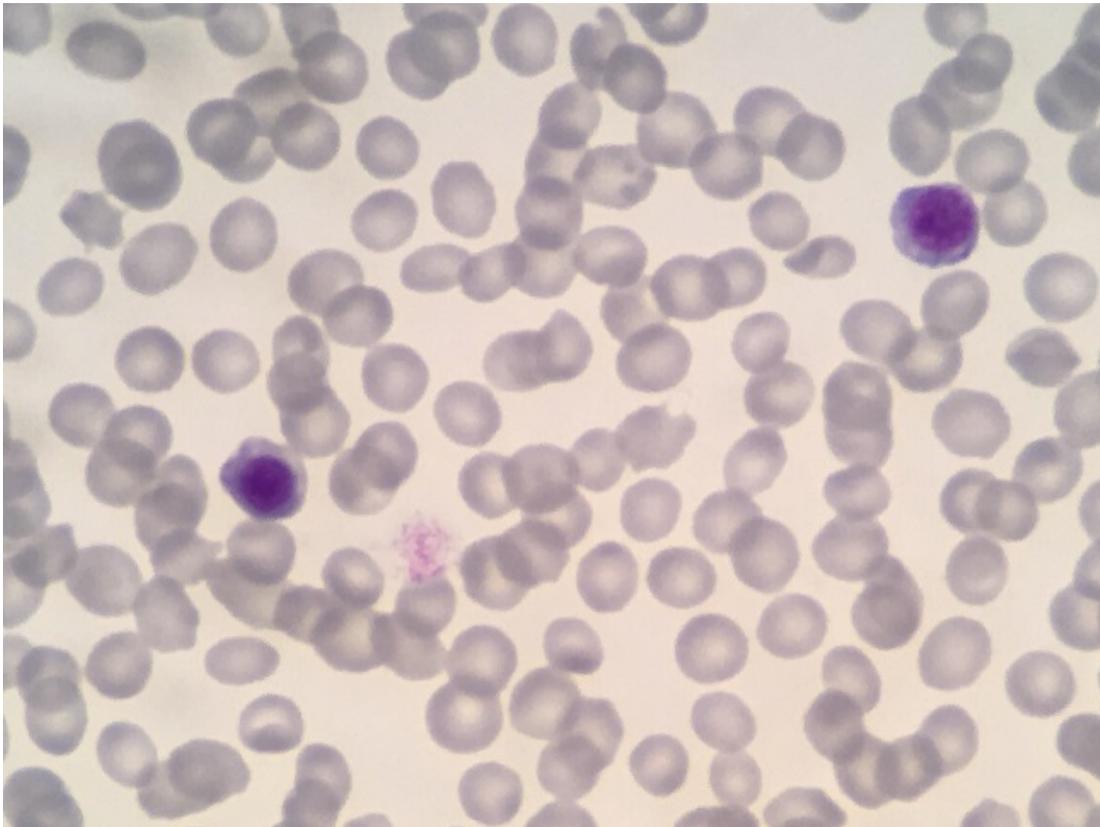
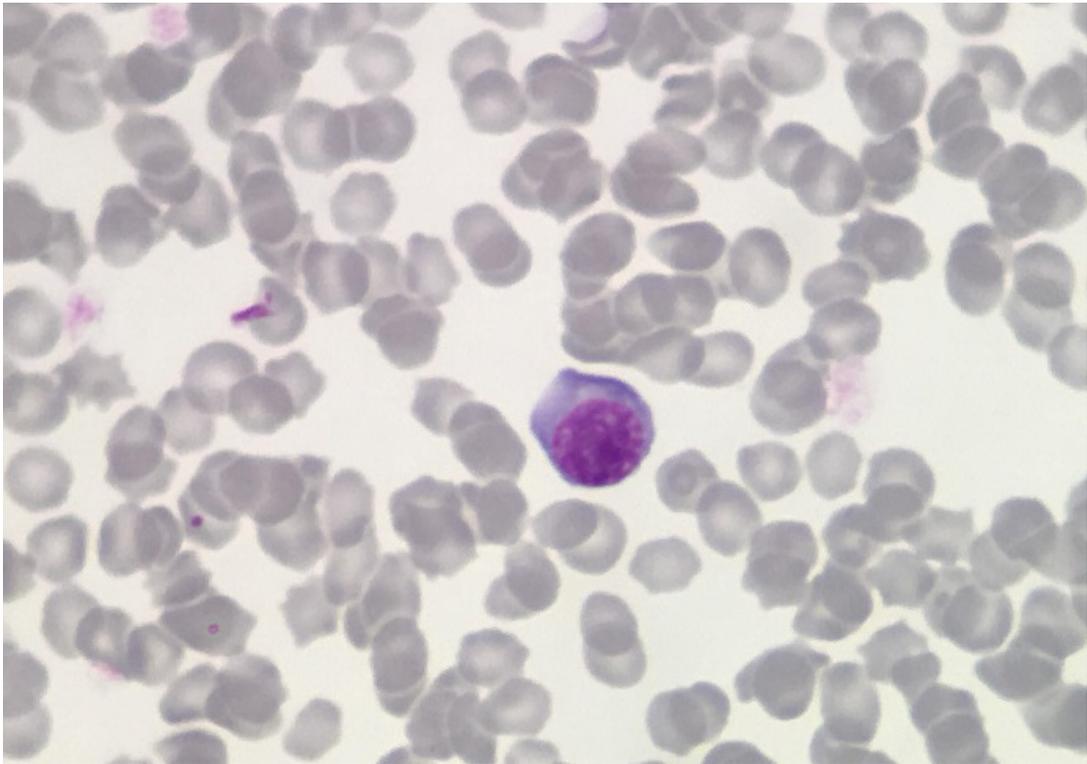


Figure 4: rubricyte in the blood smear. May Grünwald-Giemsa (100x).



Questions

- 1. What are your main differential diagnoses?
- 2. Which is the reason for the lymphocytosis?