

A PECULIAR SYSMEX SCATTERGRAM IN A CAT AFFECTED BY FELINE INJECTION SITE SARCOMA

Angelica Stranieri, Roberta Ferrari, Sergio Zanzani, Gabriele Rossi
Department of Veterinary Science and Public Health, University of Milan, Milan, Italy

Signalment

A 13-year-old female, neutered, domestic short-haired cat.

History and clinical findings

The cat was presented to the Veterinary Teaching Hospital of the University of Milan for an interscapular mass already diagnosed as a mesenchymal malignant tumor by the referring veterinarian, based on cytological examination of the neoplasm.

At the presentation, the cat appeared in good shape and the clinical evaluation revealed only the presence of a mobile, solid, non painful and non ulcerated round mass, 1,5 X 1,4 cm in diameter, located in the subcutaneous tissue of the interscapular area.

The cat was regularly vaccinated and treated for ectoparasites with fipronil-based products. Tests for both feline immunodeficiency virus (FIV) and feline leukemia virus (FeLV) were never performed.

Diagnostic procedures and haematology

Cancer staging by total-body CT scan allowed to exclude the presence of loco-regional and distant metastasis. Wide margins excision of the neoplasm was performed, and the histological examination led to a definitive diagnosis of feline injection site sarcoma (FISS). A pre-surgical examination with wakeful cat was performed including biochemical analysis with automated spectrophotometer (Cobas Mira, Roche Diagnostics, Basel, Switzerland) and complete blood count (CBC) using the Sysmex XT-2000iV hematology laser analyzer (Sysmex Corporation, Kobe, Japan). A blood smear was also prepared and stained with a rapid staining (Hemacolor[®], Merck, Darmstadt, Germany). Biochemistry was unremarkable except for mild hyperglycemia, most likely stress-induced (Table 1)

ANALYTE	DATA	REFERENCE INTERVAL
Urea (mg/dL)	54	(20-60)
Creatinine (mg/dL)	1.58	(<1.8)
Glucose (mg/dL)	205	(80-130)
Total Protein (g/dL)	7.13	(6.0-8.0)
ALT (U/L)	36	(<80)
ALP (U/L)	38	(<145)
Na ⁺ (mmol/L)	145	(145-156)
K ⁺ (mmol/L)	4.0	(3.4-4.8)
Cl ⁻ (mmol/L)	118	(108-123)

Table 1.

Biochemical results of the cat pre-surgical examination.

Only a mild hyperglycemia is present.

Patient's erythrogram showed no significant alterations, while white blood cell count showed leukocytosis with slight neutrophilia and moderate eosinophilia. The Sysmex WBC/DIFF scattergram showed an unusual cloud, located between the neutrophils, the eosinophils and the lymphocytes clouds and partially included in each of these populations gates. This cloud was clearly separated from the others when the scattergram was "switched" in the manual analysis frame (Figure 1)

On the day of surgery (24 days after the first blood sample), another blood sample was collected in order to repeat the CBC. The Sysmex WBC/DIFF scattergram of the second blood sample was very similar to the first one, but the differential count was slightly different, since all the leukocyte parameters were within the reference intervals (Table 2).

ANALYTE	FIRST SAMPLE	SECOND SAMPLE	REFERENCE INTERVALS
RBC ($\times 10^{12}/L$)	8.2	6.7	5,0-10,0
HGB (g/dL)	12.8	10.4	8,0-15,0
HCT (%)	38.4	31.2	24-45
MCV (fL)	46.8	46.5	39-55
MCH (pg)	15.6	15.5	14-19
MCHC (%)	33.3	32.1	31-35
PLT ($10^9/L$)	72	32	200-600
RDW	23.0	21.1	12-23
Total WBC ($\times 10^9/L$)	20,14	13,81	6,0-17,0
Neutrophils (%)	66,0	47,4	35-75
Neutrophils ($\times 10^9/L$)	13,30	6,55	2,5-12,5
Band (%)	-	-	< 3
Band ($\times 10^9/L$)	-	-	< 0,3
Lymphocytes (%)	12,7	37,1	20-55
Lymphocytes ($\times 10^9/L$)	2,55	5,12	1,5-7,0
Monocytes (%)	3,3	2,4	1-4
Monocytes ($\times 10^9/L$)	0,66	0,33	0,0-0,85
Eosinophils (%)	18,0	13,1	2-12
Eosinophils ($\times 10^9/L$)	3,63	1,81	0,0-1,5
Basophils (%)	0	0	Rare
Basophils ($\times 10^9/L$)	0	0	Rare

Table 2.

Summary of the cat haematological results at the first and at the second sampling obtained with Sysmex XT-2000iV analyzer.

First sample shows leukocytosis with neutrophilia and eosinophilia, while the second sample results are within the reference intervals.

Platelet count resulted adequated at the blood smear evaluation in both cases.

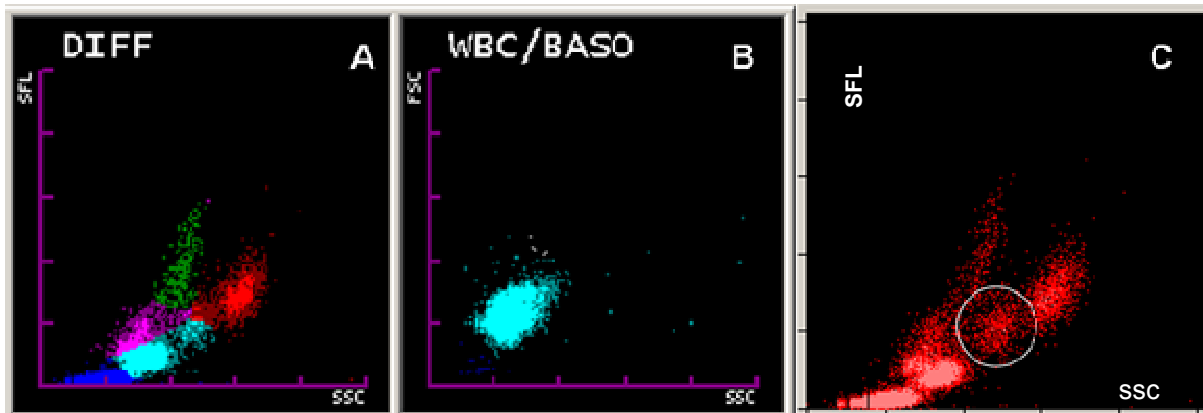


Figure 1.

Sysmex XT-2000iV scattergrams of the feline blood leukocytes collected at the first sampling.

The WBC/DIFF scattergram (A) shows an additional cloud between the neutrophil, the eosinophil and the lymphocyte population. The separation of this unusual cloud is more evident when the scattergram is “switched” in the manual analysis frame (C, white circle). The WBC/BASO channel scattergram (B) shows no lysis-resistant population increases. FSC: Forward scattered light; SFL: Side fluorescence light; SSC: Side scatter light.

Questions

What is the unusual population represented in the WBC/DIFF scattergram?

Which is the possible explanation for this finding?