

Another hint from the Sysmex XT-2000iV scattergram

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Signalment

A 9-year-old, male, neutered domestic short-haired cat.

History and diagnostic procedures

The cat was admitted to the Veterinary Teaching Hospital of the University of Milan for history of dysorexia, vomiting and lethargy during the last two weeks. At the clinical examination, the only evident alteration was the presence of few masses perceived with abdominal palpation. A complete blood count (CBC) with the Sysmex XT-2000iV hematology laser analyzer (Sysmex Corporation, Kobe, Japan) and biochemical analysis with automated spectrophotometer (BT3500, Biotecnica Instruments, Rome, Italy) were performed.

To investigate the presence of abdominal masses, an abdominal ultrasound was also performed, revealing a slight hepatomegaly, a diffuse thickening of the jejunum and marked lymphadenomegaly of all the mesenteric lymph nodes. Fine needle aspiration (FNA) of liver, spleen and mesenteric lymph node was performed for cytologic examination (Figure 1).

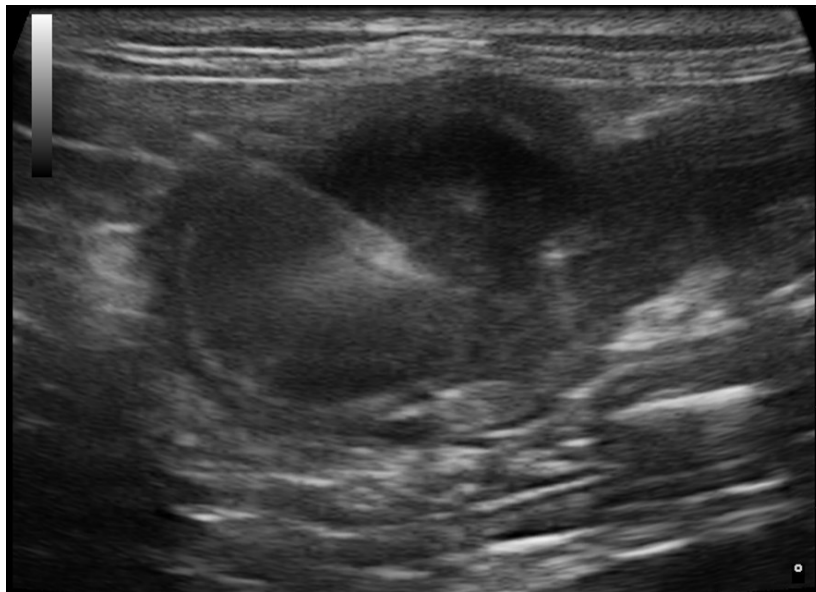


Figure 1. Abdominal ultrasound images of the cat. FNA of one enlarged mesenteric lymph node.

Serum was jaundiced and serum biochemistry revealed a slight hyperglycemia, probably stress-induced, and a marked increase of the liver enzymes ALT and ALP activity (Table 1).

The cat's CBC showed moderate lymphopenia (Table 2), while all the other parameters were within the reference intervals.

ANALYTE	RESULT	REFERENCE INTERVALS
Urea (mg/dL)	43	(20-60)
Creatinine (mg/dL)	1,2	(<1,8)
Glucose (mg/dL)	196	(95-130)
Total protein (g/dL)	7,8	(5,4-8,5)
Albumin (g/dL)	2,9	(2,1-3,3)
A/G	0,6	(0,8-1,7)
ALT (U/L)	2437	(6-83)
ALP (U/L)	348	(25-93)

Table 1. Biochemical results obtained with the automated spectrophotometer BT3500 (Biotechnica Instruments, Rome, Italy). Slight hyperglycemia and marked increase of ALT and ALP are present.

Analyte	Result	Reference intervals
RBC (x10 ⁶ /μL)	5,43	5,7-10
HGB (g/dL)	10,2	8-15
HCT (%)	30,5	24-45
MCV (fL)	55	39-55
MCH (pg)	18,8	14-19
MCHC (g/dL)	33,4	26-35
PLT (x10 ³ /μL)	205	200-600
RDW (%)	18,1	14,4-19,4
Total WBC	9,38	6-17
Neutrophils (%)	76,6	35-75
Neutrophils (x10 ³ /μL)	7,18	3-13,4
Lymphocytes (%)	7	20-55
Lymphocytes (x10 ³ /μL)	0,66	2-7,2
Monocytes (%)	9,6	1-4
Monocytes (x10 ³ /μL)	0,9	0-1
Eosinophils (%)	6,8	2-12
Eosinophils (x10 ³ /μL)	0,64	0,3-1,7
Basophils (%)	0,0	0-1
Basophils (x10 ³ /μL)	0,00	0-0,1

Table 2. Cat's hematological results obtained with the Sysmex XT-2000iV (Kobe, Japan) analyzer. Only a moderate lymphopenia is present.

The Sysmex XT-2000iV WBC/DIFF channel showed an additional population located between the lymphocytes/monocytes clusters and the eosinophils cluster (Figure 2).

The WBC/BASO channel showed an unusual extension on the right of the total WBC cluster.

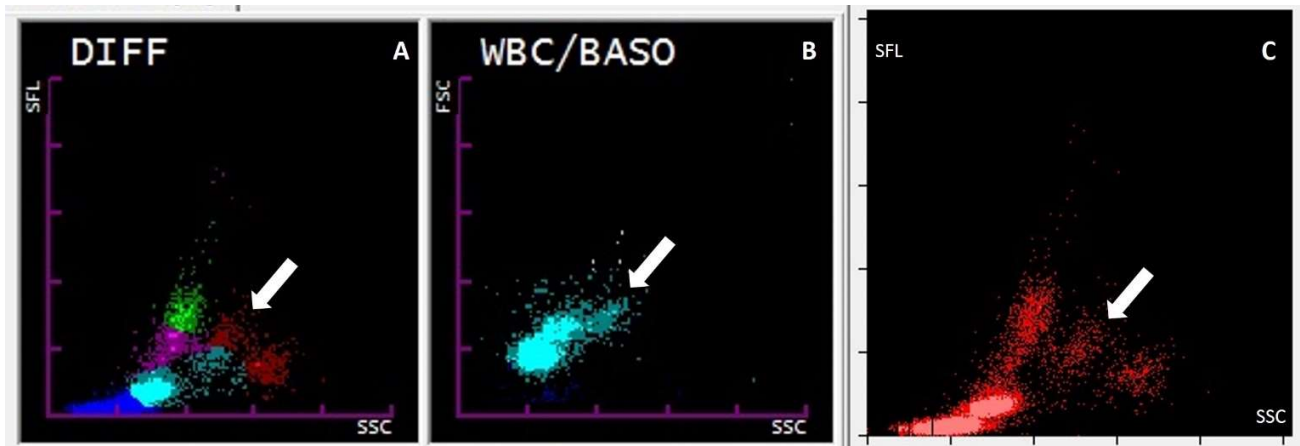


Figure 2. Sysmex XT-2000iV scattergrams. The WBC/DIFF scattergram showed an additional cellular cluster between the lymphocytes/monocytes clusters and the eosinophils cluster (A, white arrow). On the WBC/BASO channel scattergram, an elongation of the total WBC cloud is visible on the right (B, white arrow), but it is not classified as lysis resistant cellular population. On the manual analysis frame, the additional population appears clearly separated from the others (C, white arrow). [FSC: Forward scattered light; SFL: Side fluorescence light; SSC: Side scattered light]

Questions

What could be represented in the additional cluster of the WBC/DIFF scattergram?

What is (are) the next step(s) to take?