

## Pleural effusion in a 1 year old heifer

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### Signalment

1 year-old Limousine Heifer

### History

The heifer was presented for anorexia, dyspnea, tachycardia and marked edema extending from the sternum to the umbilicus

### Diagnostic procedures and Laboratory data

- Thoracic ultrasound revealed a severe left thoracic effusion and a thickened pericardium
- Hematology and biochemistry analyses gave the following results :

Hematology (Sysmex XT-2000iV, Sysmex, Kobe, Japan)		
	Value	Reference interval
RBC (10 <sup>6</sup> /μL)	5.95	4.8 - 7.8
HGB (g/dL)	10.0	8.2 - 13
HCT (%)	27.8	24 - 39
MCV (fL)	46.7	41.2 - 58.7
MCH (pg)	16.8	14.3 - 19.6
MCHC (g/dL)	36.0	32.4 - 35.8
PLT (10 <sup>3</sup> /μL)	191	100 - 800
WBC (10 <sup>3</sup> /μL)	23.74	4.4 - 10.8
NEUT (10 <sup>3</sup> /μL)	7.97	0.8 - 5.0
LYMPH (10 <sup>3</sup> /μL)	13.42	1.8 - 4.9
MONO (10 <sup>3</sup> /μL)	1.95	0.3 - 1.2
EO (10 <sup>3</sup> /μL)	0.01	0.0 - 0.1

Biochemistry (Vitros 350, Ortho Clinical Diagnostics, Raritan, NJ, USA)		
	Value	Reference interval
Urea (mmol/L)	13.9	2.1 - 7.9
Creatinine (μmol/L)	164.9	44 - 97
AST (U/L)	212	58 - 100
GGT (U/L)	72	22 - 64

Total Proteins (g/L)	90.1	58 - 75
Albumin (g/L)	36.6	24 - 35

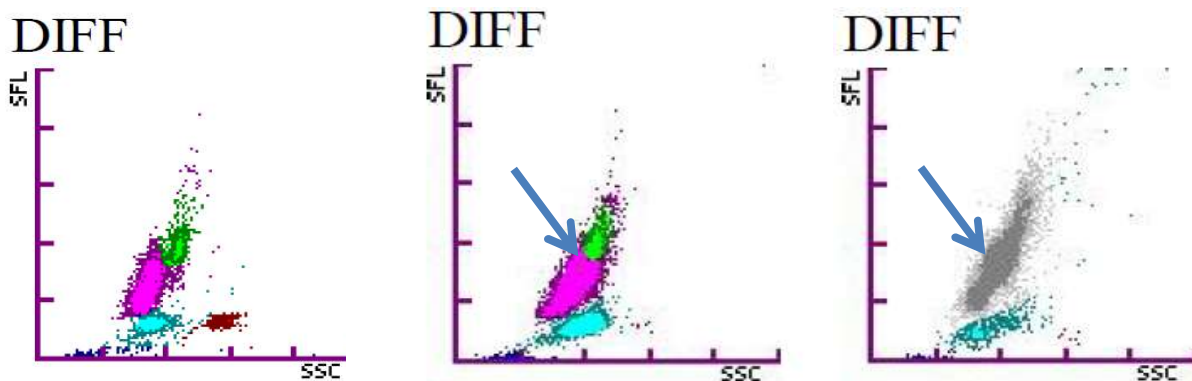
Thoracic ultrasound revealed severe left thoracic effusion and thickened pericardium.

Pleural effusion had moderate to high cellularity ( $13.93 \times 10^3/\mu\text{L}$ ) and a low total protein concentration (10g/L).

**Questions:**

- 1) What could represent the dots indicated by the blue arrows (Fig1)?
- 2) What are these cells (Fig.2)?
- 3) What are your main hypotheses?
- 4) What further examination would you propose?

**Figure 1**

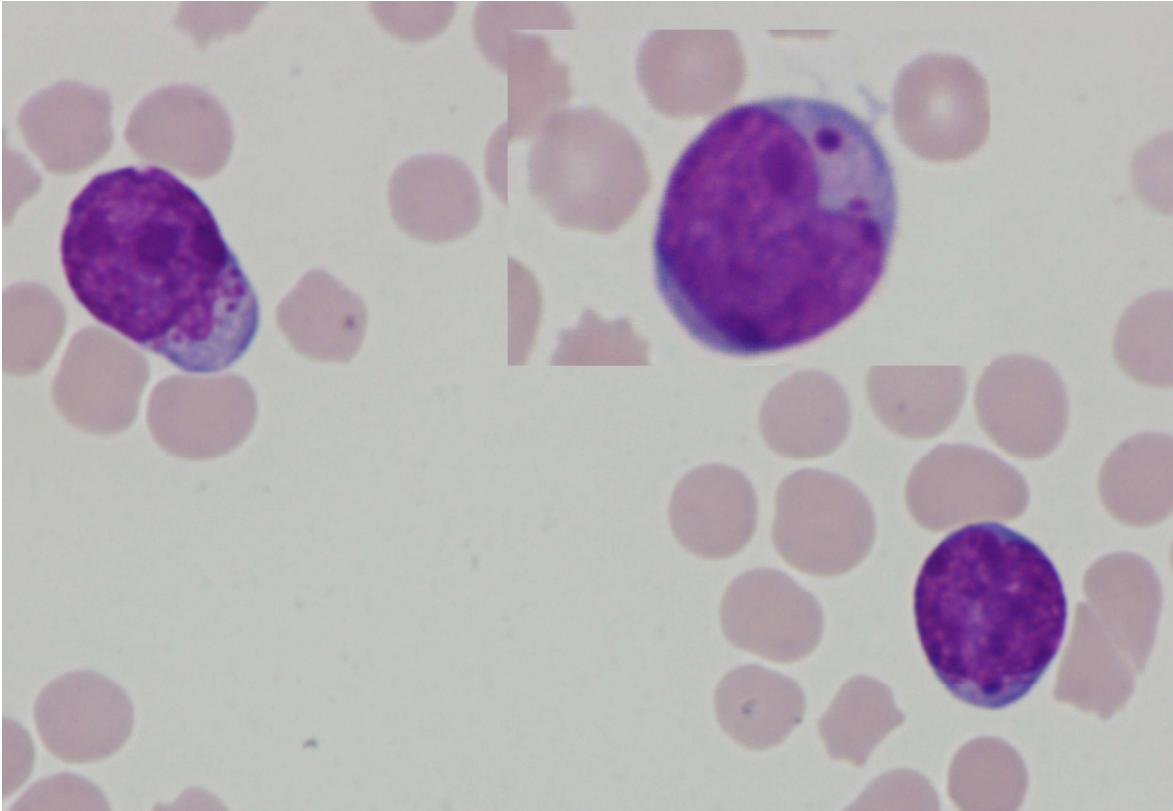


Healthy cattle blood  
DIFF Scattergram

Heifer blood  
DIFF Scattergram

Heifer pleural effusion  
DIFF Scattergram

**Figure 2a : Blood smear, MGG, x1000 magnification**



**Figure 2b : pleural effusion, MGG, x400 magnification**

