

## **Anemia in a dog**

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### **Signalement**

A 1.5-year-old, intact female, Border collie dog

### **Case History**

The dog was presented to the referring veterinarian with a two-week history of being lethargic. It had attended a herding training camp two weeks previously. It had never been outside of the northern part of Sweden and had not had any ectoparasites according to the owner. There was no suspicion of intoxication and there was no history of previous illness or medication.

### **Physical exam**

On presentation the dog was lethargic and had pale mucous membranes, poor body condition and a poor hair coat.

### **Laboratory findings**

A blood sample was submitted by mail to the Clinical Pathology Laboratory, University Animal Hospital, Swedish University of Agricultural Sciences, Uppsala, Sweden, for a complete hematological profile. The hematology analysis was performed on an Advia 2120 hematology instrument (Siemens Healthcare Diagnostics, Erlangen, Germany) and by evaluation of a May-Grünwald Giemsa stained blood smear. The blood sample was run twice on the hematology instrument because the results from the first run came with many flags. The results from the second run differed from the results from the first run but the flags were similar.

A second blood sample was submitted 17 days later.

**Table 1:** Hematology results obtained on May 21<sup>st</sup> with the Advia 2120.

Parameter	Result, 1 <sup>st</sup> run	Result, 2 <sup>nd</sup> run	Unit	Reference Interval
Hematocrit	0.31	0.30 <sup>1</sup>	L/L	0.38 - 0.57
Reticulocytes	406 <sup>1</sup>	286	10 <sup>9</sup> /L	<50
Reticulocytes %	10.4 <sup>1</sup>	7.6	%	0 - 1.5
Platelets	329* <sup>1</sup>	300* <sup>1</sup>	10 <sup>9</sup> /L	170-490
WBC reported	7.7 <sup>1</sup>	21.7 <sup>1</sup>	10 <sup>9</sup> /L	5.8 - 16
WBC Baso	22.5 <sup>1</sup>	21.7 <sup>1</sup>	10 <sup>9</sup> /L	5.8 - 16
WBC Perox	7.7 <sup>1</sup>	8.1 <sup>1</sup>	10 <sup>9</sup> /L	5.8 - 16
Neutrophils	1.6	1.6 <sup>1</sup>	10 <sup>9</sup> /L	3 - 11.5
Eosinophils	0.1	0.1 <sup>1</sup>	10 <sup>9</sup> /L	0.1 - 1.2
Basophils	0.5 <sup>1</sup>	1.5 <sup>1</sup>	10 <sup>9</sup> /L	< 0.1
Lymphocytes	5.0 <sup>1</sup>	19.3 <sup>1</sup>	10 <sup>9</sup> /L	1.4 - 4.8
Monocytes	0.6	0.6 <sup>1</sup>	10 <sup>9</sup> /L	0.2 - 1.4
340 metarubricytes/100 WBCs were seen on blood smear evaluation				

<sup>1</sup> Results with flags

\*Marked platelet clumping

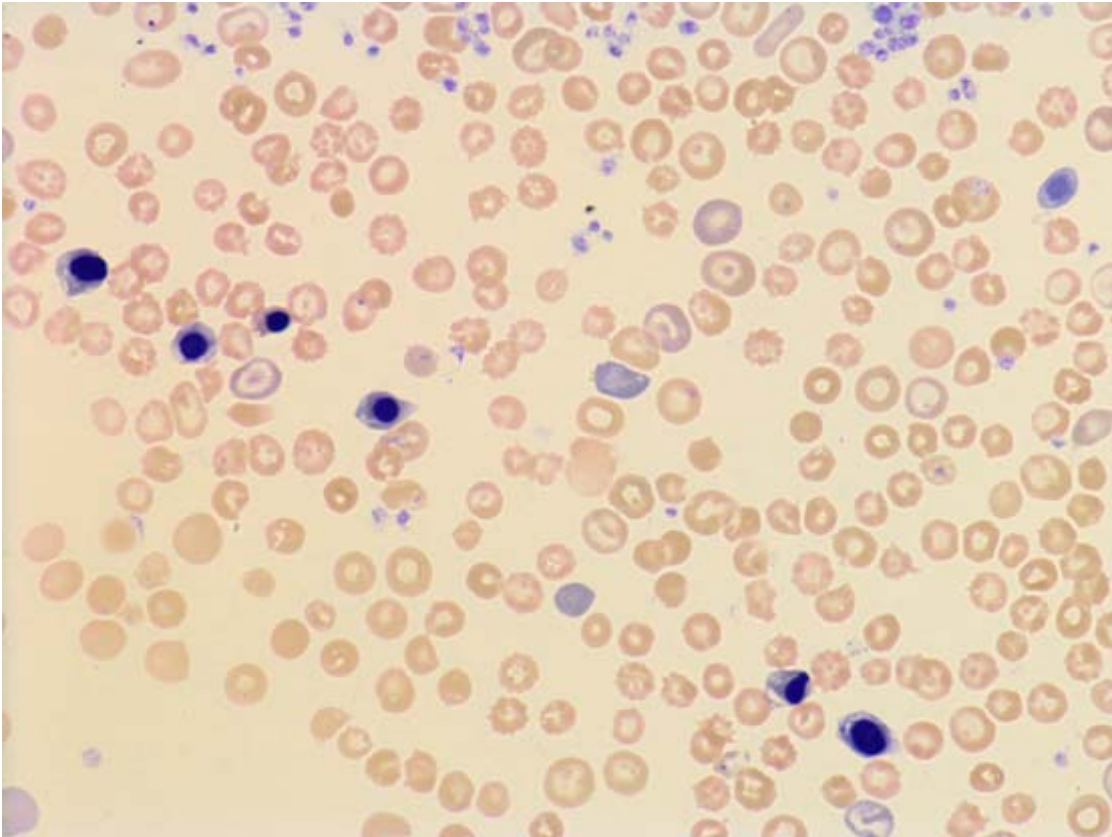
**Table 2:** Hematology results obtained on June 7<sup>th</sup> with the Advia 2120.

Parameter	Result	Unit	Reference Interval
Hematocrit	0.33	L/L	0.38 - 0.57
Reticulocytes	31	10 <sup>9</sup> /L	<50
Reticulocytes %	0.7	%	0 - 1.5
Platelets	173* <sup>1</sup>	10 <sup>9</sup> /L	170-490
WBC reported	13.6 <sup>1</sup>	10 <sup>9</sup> /L	5.8 - 16
WBC Baso	13.6 <sup>1</sup>	10 <sup>9</sup> /L	5.8 - 16
WBC Perox	8.6 <sup>1</sup>	10 <sup>9</sup> /L	5.8 - 16
Neutrophils	3.6 <sup>1</sup>	10 <sup>9</sup> /L	3 - 11.5
Eosinophils	0.1 <sup>1</sup>	10 <sup>9</sup> /L	0.1 - 1.2
Basophils	0.9 <sup>1</sup>	10 <sup>9</sup> /L	< 0.1
Lymphocytes	9.1 <sup>1</sup>	10 <sup>9</sup> /L	1.4 - 4.8
Monocytes	0.7 <sup>1</sup>	10 <sup>9</sup> /L	0.2 - 1.4
147 metarubricytes/100 WBCs were seen on blood smear evaluation			

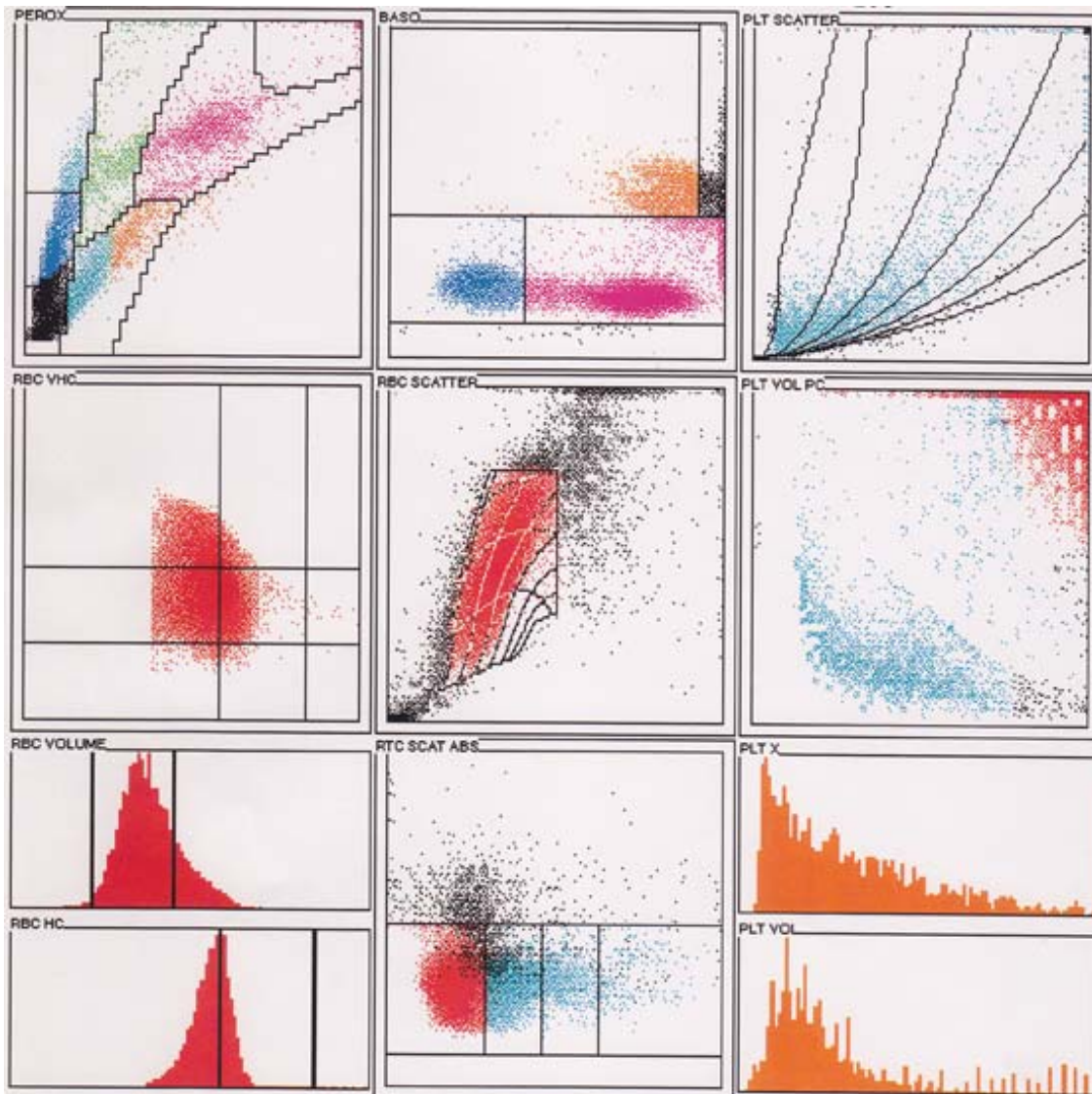
<sup>1</sup> Results with flags

\*Marked platelet clumping

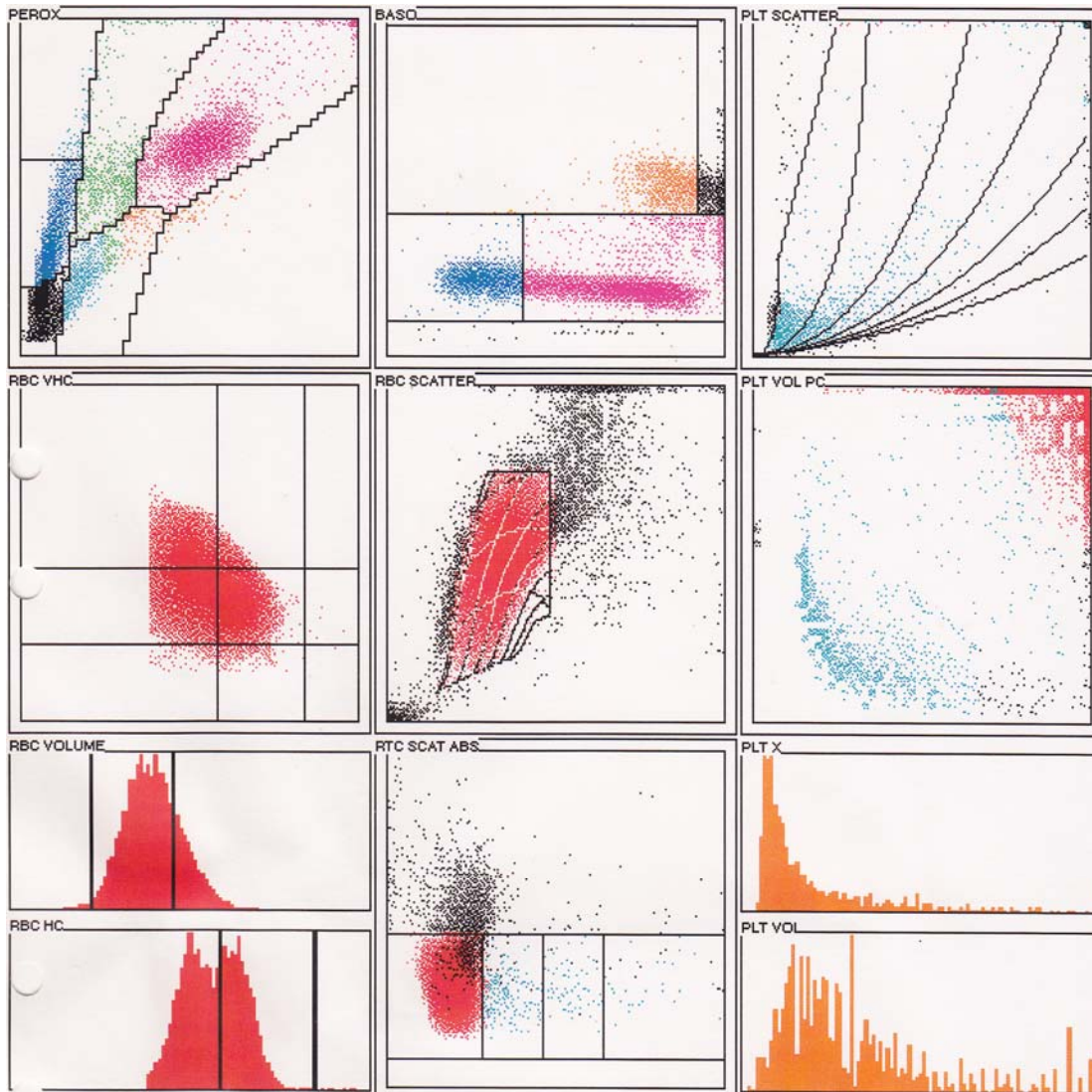
**Figure 1:** Blood Smear Morphology, May 21<sup>st</sup> (May Grünwald Giemsa stain, original magnification was about 500X).



**Figure 2:** Advia 2120 Graphics, May 21<sup>st</sup>.



**Figure 3:** Advia 2120 Graphics, June 7<sup>th</sup>.



Questions:

1. What caused the difference in WBC and reticulocyte counts?
2. What diseases would you consider?
3. What additional tests would you consider?