

# Presumed Pseudo-Pelger-Huët anomaly and basophilia in a dog secondary to chronic lymphocytic leukaemia – case presentation

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## Background

Two forms of Pelger-Huët anomaly have been described in dogs, including an inherited condition and an acquired or pseudo Pelger-Huët anomaly (PPHA).

## Case description

A 10-year-old neutered male Maltese dog, duly vaccinated and dewormed, was presented for investigation of lymphocytosis. Physical examination did not reveal any significant abnormalities.

## Tests

### Haematology: Table 1.

- **Day 0:** Mild leucocytosis with moderate lymphocytosis, basophilia and neutropenia without left shift or toxic change.
- **Day 48:** Mild non-regenerative anaemia (NRA), moderate leucocytosis due to lymphocytosis, basophilia and markedly increased non-segmented neutrophils with mild toxic change (Figure 1).
- **Day 87:** Mild NRA and slight increase in non-segmented neutrophils with mild toxic change.

**Serum biochemistry and urinalysis:** Unremarkable.

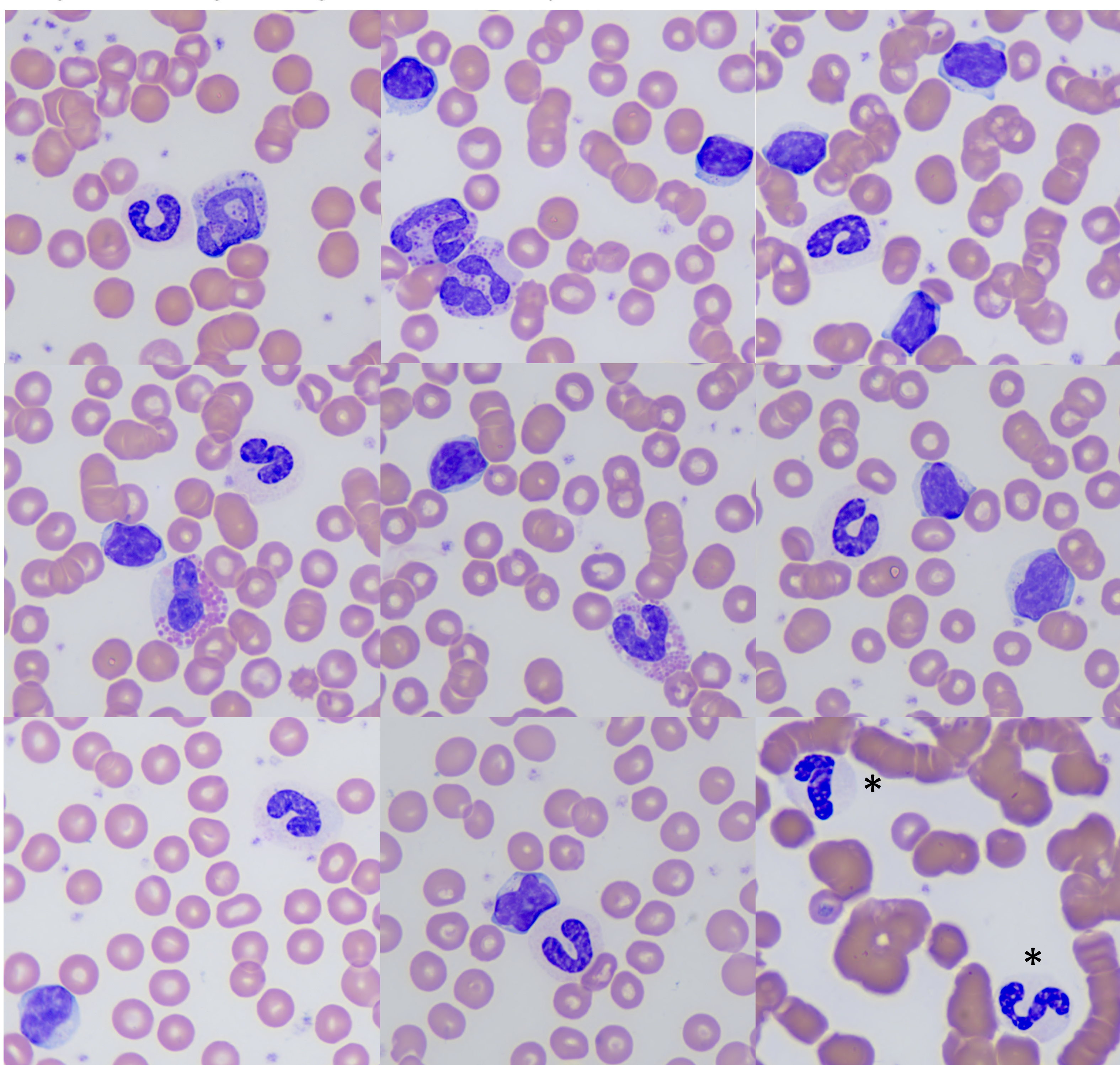
**Tests for common geographical infectious agents:** All negative.

- **Serology** for *Leishmania* spp. (ELISA).
- **Serology** for *Ehrlichia canis* and *Ehrlichia ewingii*, *Borrelia burgdorferi*, *Anaplasma phagocytophilum* and *Anaplasma platys* and **antigen** detection of *Dirofilaria immitis* (SNAP 4Dx Plus Test).
- **PCR** for *Babesia* spp. and *Theileria* spp.

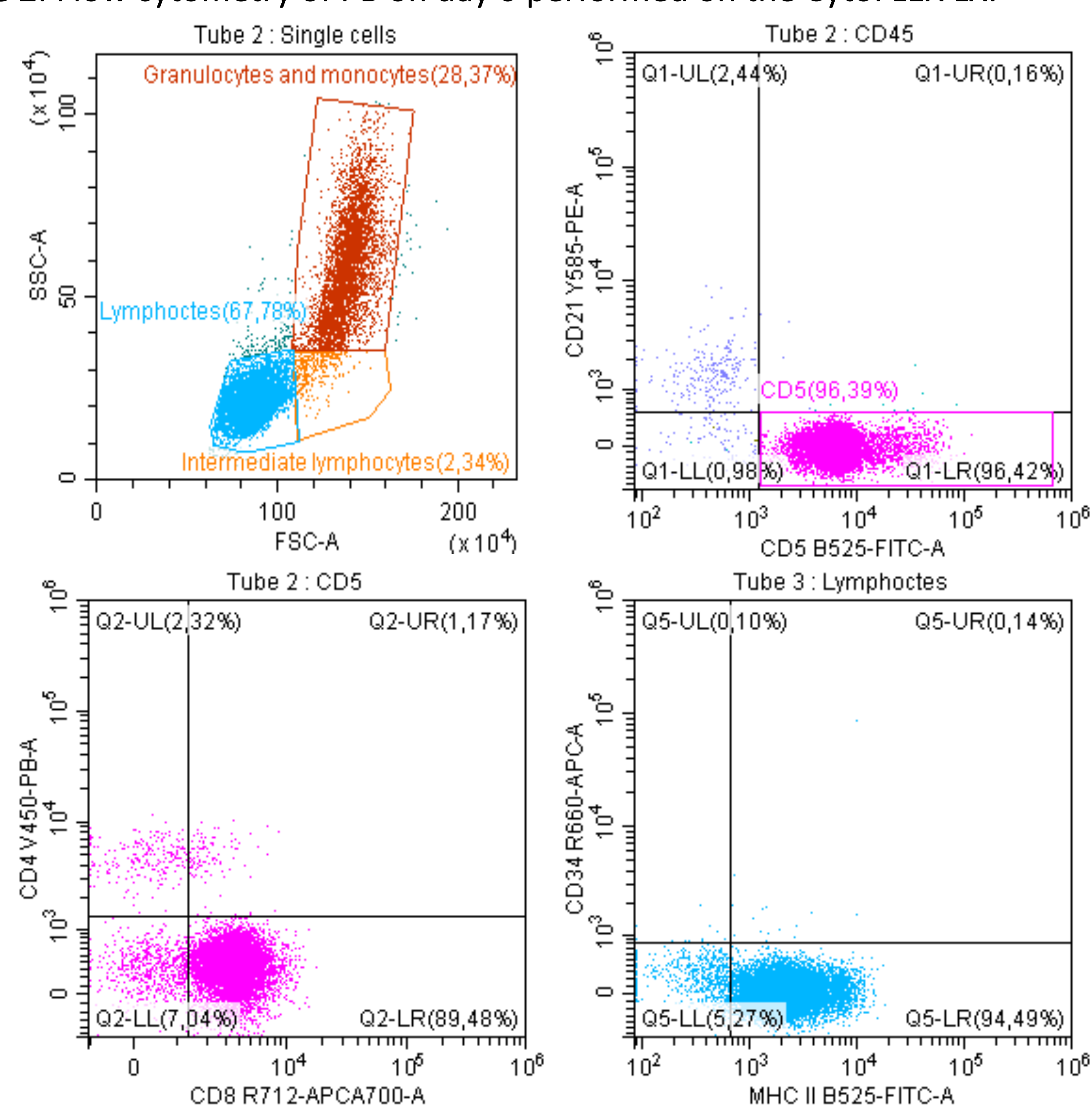
**Flow cytometry:** Small lymphocytes (68%) positive for CD45 (93%, of which CD5 (96%, of which CD8 (89%))), CD18 (85%), CD3 (89%) and MHCII (94%); and negative for CD21, CD34, CD25, CD14 and Ki67 (Figure 2).

**PCR for Antigen Receptor Rearrangements (PARR):** Clonal expansion of T-cell receptor gamma chain genes (IDEXX Laboratories, Barcelona).

**Figure 1:** PB smear micrographs on day 48, showing hyposegmented neutrophils and eosinophils, basophils, lymphocytes and segmented neutrophils (asterisks). Modified Wright stain, original magnification 100x objective.



**Figure 2:** Flow cytometry of PB on day 0 performed on the CytoFLEX LX.



**Table 1:** CBC performed on the Sysmex XN100 with peripheral blood (PB) smear review.

Parameter:	Reference interval:	Presentation (day 0)	Day 48 post-presentation	Day 87 post-presentation
PCV (L/L)	0.37-0.55	0.38	0.34	0.32
Reticulocyte count 10 <sup>6</sup> /L	0-60	36.43	52.61	35.02
White blood cell (WBC) count 10 <sup>6</sup> /L	6-17	19.24	36.7	8.28
Segmented neutrophils 10 <sup>6</sup> /L	3-11.5	1.347	7.52	4.02
Non-segmented neutrophils 10 <sup>6</sup> /L	0-0.3	0	4.04	0.5
Lymphocytes 10 <sup>6</sup> /L	1-4.8	14.62	21.47	2.32
Monocytes 10 <sup>6</sup> /L	0.15-1.35	0.58	1.1	1.04
Eosinophils 10 <sup>6</sup> /L	0.1-1.5	0.58	1.1	0.41
Basophils 10 <sup>6</sup> /L	0-0.2	2.12	1.47	0
Platelets 10 <sup>6</sup> /L	200-500	315	447	478

### PB smear review:

**Day 0:** Small to medium-sized lymphocytes, often granulated.

**Day 48:** Marked hyposegmentation of neutrophils (with mild toxic change) and eosinophils. Similar lymphocytes to day 0. Rouleaux formation of RBC (Figure 1).

**Day 87:** slight increased hyposegmented neutrophils, mild toxic change.

## Treatment and follow-up

On day 48 post-presentation treatment with chlorambucil and prednisolone (0.4 and 0.7 mg/kg q48h, respectively) was started. On day 87, the dog was clinically healthy and the CBC showed mild NRA and slight increase in non-segmented neutrophils.

## Discussion

The diagnosis of chronic lymphocytic leukaemia (CLL) was made on the basis of monoclonal expansion of CD8+ T-cells and the exclusion of common infectious aetiologies, inflammatory conditions, or organomegaly or lymph node enlargement. Basophilia and probable PPHA were considered possibly secondary to CLL. To the authors' knowledge, this is the first report of presumed PPHA and basophilia secondary to CLL in dogs.