

Microcytic Anemia Due to Gastric Ulcer in a Dog

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Abstract: In this case, a 12 years old, female, terrier dog was referred to the University of Kirikkale, Faculty of Veterinary, Department of Internal Medicine with complaints of lethargy, decreased appetite, gastrointestinal bleeding and dyspnea was constituted. Additionally, the owner had used the nonsteroidal anti-inflammatory pomads against tendinitis and the dog was licked when the pomads was applied. On clinical examination; gastric ulcer was detected. Microcytic anemia was determined by the haematological examination. Parenteral Iron drug was used for treatment. At the 20th day of therapy all blood parameters and clinical signs were recovered.

Key words: Terrier dog, appetite, dyspnea, anti-inflammatory, haematological examination, Turkey

CASE REPORT

In the present article anemia due to iron deficiency and its therapy with administration iron drug by parenterally. Anemia is a condition where red blood cells are not providing adequate oxygen to body tissues. There are many types and causes of anemia (Feldman, 2000). Iron deficiency anemia is a decrease in the number of red cells in the blood caused by too little iron (Feldman, 2000). The causes of iron deficiency are too little iron in the diet, poor absorption of iron by the body and loss of blood (including from heavy ... bleeding) (Nelson, 2003). In iron deficiency, a decrease in the MCV will precede a decrease in the Mean Corpuscular Hemoglobin Concentration (MCHC) (Nelson, 2003; Latimer *et al.*, 2003).

It can also be related to lead poisoning in dog is usually caused by gastrointestinal blood loss associated with ulcers (Latimer *et al.*, 2003), the use of aspirin or other Nonsteroidal Anti-inflammatory medications (NSAIDs) or certain types of cancer (esophagus, stomach, colon) (Graham and Smith, 1988; Laine and Weinstein, 1988; McCarthy, 1989; Fries *et al.*, 1989; Carson *et al.*, 1987).

A 12 years old, female, terrier dog referred to the University of Kirikkale, Faculty of Veterinary, Department of Internal Medicine was included in the present study. At the anamnesis; lethargy, decreased appetite and dyspnea was noticed. It was learned from the owner that the applied nonsteroidal anti-inflammatory pomads

Table 1: Results of haematological and biochemistic examinations

Parameters	Initial day of treatment	At the 20th day of treatment
WBC (k μL^{-1})	7.50	7.80
RBC (M μL^{-1})	4.26	5.08
HGB (g dL^{-1})	9.10	11.40
HCT (%)	26.20	42.20
MCV (fL)	61.50	84.00
MCHC (g dL^{-1})	34.80	35.40
PLT (K μL^{-1})	212.00	200.00
FERRITIN (ng mL^{-1})	36.00	220.00
GLUCOSE (mg dL^{-1})	93.00	86.00
AST (U L^{-1})	36.00	36.00
ALT (IU L^{-1})	36.00	36.00
RDW (%)	18.50	13.00

(diclofenac sodium, Naprosyn[®]) for tendinitis was licked by the unattended dog. Vaginal cytology was performed for determination of estrous cycle and ultrasonography examination for pregnancy diagnosis or any infection of genital truck. On clinical examination; exercise intolerance, emesis with blood, melena, eczema, pale on mucosa, gastric ulcer (by radiography) and halitosis were detected. On blood examination (Table 1); lower haemoglobin, MCV and hematocrit and serum ferritin parameters. Based on clinical signs, haematologic signs and the admittedly history it was suggested that the condition was anemia due to primarily gastric ulcer and secondly iron deficiency as a result of gastrointestinal bleeding.

Iron injection (Demforject inj. sol., 10%, 2 mL IM for 3 days), Menadion Sodyum Bisulfid (Libavit K inj. 20 mg, 0,5 mL IM totally) and Ranitidine (Ulcuran inj. 50 mg, 50 mg b.i.d IM for 7 days) were applied to the patient. At

the 2nd day of therapy appetite got better. At the 20th day of the therapy total recovery was observed both with regards to the owner and blood parameters. Finally it is suggested that iron deficiency should be considered in dogs with anemia and parenteral iron applications are useful for therapy.

DISCUSSION

Iron deficiency can be caused from chronic blood losses, gastrointestinal tumors, urinary blood tumors or hemorrhagic diseases. Decreased serum iron (Kaneko *et al.*, 1997), serum ferritin (Nelson, 2003), lower Mean Corpuscular Volume (MCV) (Kaneko *et al.*, 1997) and Mean Corpuscular Hemoglobin Concentration (MCHC) (Kaneko *et al.*, 1997) datas may be seen as clinical signs in dogs with iron deficiency but serum TIBC does not change significantly 1, (Nelson, 2003; Kaneko *et al.*, 1997). In this case decreased MCV, hemoglobin, ferritin and Hct were seen as previous report but TIBC was not measured.

If the cause of anemia is gastric ulcer you can see the clinical signs as diarrhea, melena and hematochezia (Feldman, 2000; Nelson, 2003; Graham and Smith, 1988; Kaneko *et al.*, 1997). In previous study diarrhea, melena and hematochezia was reported in dogs (Kaneko *et al.*, 1997) following gastric ulcer. In line with previous reports the present dog was diagnosed to have an hypochromic and microcytic anemia because of close contact with the nonsteroidal anti-inflammatory medications by licking higher RDW values describes anisocytosis in dogs and the findings regarding anisocytosis is in agreement with (Nelson, 2003).

A wide range of disorders result in iron deficiency anemia in people, including inadequate iron intake, iron malabsorption, chronic hemorrhage, intravascular hemolysis with hemoglobinuria pregnancy or lactation and combination of these factors. By contrast, the principal cause of iron deficiency anemia in most domestic animal is external blood loss especially gastrointestinal bleeding. Dietary causes are rare. With bleeding, anemia is initially regenerative (macrocytic hypochromic) but microcytic hypochromic changes develop and reticulocytosis decreases as iron stores are depleted.

The definitive test for iron deficiency anemia is measurement of serum ferritin. A low serum ferritin level is diagnostic of an iron depleted state. Serum iron, total iron binding capacity and transferrin saturation do not accurately distinguish iron deficiency anemia from anemia of chronic disease and therefore have limited value in the evaluation of microcytic anemia.

CONCLUSION

According to the knowledge, parenteral iron drugs can be used against microcytic anemia in dogs due to gastrointestinal bleeding.

REFERENCES

- Carson, J.L., B.L. Strom, K.A. Soper, S.L. West and M.L. Morse, 1987. The association of nonsteroidal antiinflammatory drugs with upper gastrointestinal tract bleeding. *Arch. Intern. Med.*, 147: 85-88.
- Feldman, B.F., 2000. *Schalms Veterinary Hematology*. 5th Edn., Lippincott Williams and Wilkins, Baltimore MD, USA., pp: 190-204.
- Fries, J.F., S.R. Miller, P.W. Spitz, C.A. Williams, H.B. Hubert and D.A. Bloch, 1989. Toward an epidemiology of gastropathy associated with nonsteroidal antiinflammatory drug use. *Gastroenterology*, 96: 647-655.
- Graham, D.Y. and J.L. Smith, 1988. Gastroduodenal complications of chronic NSAID therapy. *Am. J. Gastroenterol.*, 83: 1081-1084.
- Kaneko, J.J., J.W. Harvey and M. Bruss, 1997. *Clinical Biochemistry of Domestic Animals*. 5th Edn., Academic Press, London, pp: 932.
- Laine, L. and W.M. Weinstein, 1988. Histology of alcoholic hemorrhagic gastritis: A prospective evaluation. *Gastroenterology*, 94: 1254-1262.
- Latimer, E.S., E.A. Mahaffey and K.W. Prasse, 2003. *Duncan and Prasse Veterinary Laboratory Medicine*. 4th Edn., Ames, Iowa State Press, USA.
- McCarthy, D.M., 1989. Nonsteroidal antiinflammatory drug-induced ulcers: Management by traditional therapies. *Gastroenterology*, 96: 662-674.
- Nelson, R.W., 2003. *Small Animal Internal Medicine*. 3rd Edn., Mosby, St. Louis, MO USA.