

## Blood Transfusion Importance in the Healing Process of Feline Panleukopenia Leading to DIC (Disseminated Intravascular Coagulation)

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**Keywords:** Blood transfusion, panleukopenia, feline parvo virus, DIC, homeostasis.

### INTRODUCTION

Feline panleukopenia caused by feline parvovirus (FPV), which is a highly contagious virus affecting all members of Felidae. Severity of clinical signs depends on age, immune status, and concurrent infections. The severity of the disease varies from the subclinical to sudden death. Typical initial signs include fever, depression, and anorexia. Cats can initially present vomit with lower frequency, develop watery to hemorrhagic diarrhea. Atypical presentations are common, especially in adult cats. Infected cats die from complications associated with secondary bacterial infection, sepsis, dehydration, and disseminated intravascular coagulopathy (DIC). Mortality rates of 25%-90% in acute panleukopenia and up to 100% in per acute infections have been reported.<sup>(1)</sup>

### CASE REPORT

#### Signalement, history and anamnesis

A British short hair cat namely Yasha in silver coated color, 6 months old, male intact had vomiting, diarrhea, loss of appetite and not active. From the history, known that the cat just arrived from Russia and been quarantined until two days ago. The cat has not yet been vaccinated against Feline Parvo Virus.

#### Clinical sign

Clinical findings on this cat are well hydrated, gum color rose and a bit gassy on the abdomen. This cat stated as positively infected by Panleukopenia virus (Feline Parvo Virus) after tested with antigen test kit for FPV. Hematology screening shows Leucopenia ( $4.79 \times 10^9/L$ ), polycitemia ( $10.07 \times 10^{12}/L$ ) dan thrombocytopenia ( $14 \times 10^9/L$ ).

The cats then hospitalized to get intensive care. Table below shows the clinical findings during the hospitalization.

Clinical signs	Day 1	Day 2	Day 5	Day 7	Day 9
Diarrhea	√	√	√	√	(2)
General Condition	QAR	QAR	QAR	Fatigue	BAR
Vomit	√	-	-	-	-
Gingivitis			√	√	√
Fever		√	√	√	-
Rash on perineal area			√	√	√
Rash on testicle area			√	√	√
Vasculitis on front leg			√	√	√

QAR: Quiet, active, responsive

BAR: Bright, active, responsive

On the 5<sup>th</sup> day, gangrene lesion found on front leg where the iv catheter previously took place and also on the testicle. The gangrene on the front leg initiated by edema and released seroma, necrotic tissue then formed. Bruised found on ventral of the hindleg and around the anus. Ulcer on gum and palatum mole were also found. The gum color turned white (anemic).



Fig 1: Gangrene tissue in several sites

#### Result of Laboratory Assay

Another blood test for Feline Parvo Virus was done and the result was negative. Complete blood screen shows anemia ( $3.71 \times 10^{12}/L$ ), trombosytopenia ( $24 \times 10^9/L$ ), and hypoalbuminemia (1.0 G/DL).

## Differential Diagnose

Panleukopenia mixed calicivirus, trauma, hemophillia, DIC (*disseminated intravascular coagulation*), septicaemia, allergic reaction, inflammation.

## Diagnose

Based on the history, anamneses and clinical signs, most likely Yasha had (*disseminated intravascular coagulation*) as secondary problem due to the panleukopenia (FPV).

## Prognosis

Prognosa is dubius-inausta. Varies from the severity of the primary (panleukopenia) and secondary (DIC) disease.

## Therapy

The treatments given was supportive treatment for the primary and secondary cause. For the primary cause (panleukopenia), the cat has been treated with fluid therapy (Ringer lactat 250ml/day). Antibiotics using both Cefotaxime 30 mg/kg BW and Metronidazole 10mg/kg BW by injection intravenous for at least a week, Anti emetics Maropitant 1mg/kg BW subcutaneously once a day until the vomit not present. Injection of Vitamin B complex once daily and also digestive enzyme for at least a week.

For the secondary cause that caused edema, bruised, ulcer and gangrene on the body, whole blood transfusion was strongly recommended. Blood transfusion were urgently needed since the cat also had thrombocytopenia dan hypoalbuminemia.



Fig 2: Blood transfusion from the same blood type.

Other than that, the cat also treated with painkiller injection using Pethidine 2mg/kg BW, Transfer Factor® as immunomodulator oral, skin-ointment from mixtures of manuka honey, wund gel®, dan xylocaine gel for the gangrene.

## DISCUSSION

DIC (Disseminated Intravascular Coagulation) is a bleeding problem in which occur without any injury. DIC is not a primary disease but rather secondary complications. In DIC, the balance between clot formation and fibrinolysis were disturbed. It may be considered as an

uncontainable burst of thrombin generation and activation resulting in systemic fibrin formation, plasmin activation, suppression of the physiologic anticoagulation mechanisms and delayed fibrin removal as a consequence of impaired fibrinolysis.<sup>(4)</sup>

Many common systemic and infectious disease associated with inflammation have been reported to initiate DIC in dogs and cats.<sup>(5)</sup> Supportive therapy and good nursing care are important to decrease mortality in cats with feline panleukopenia. Parenteral fluid therapy to restore hydration, electrolyte and acid base balance is most important. Fluids are preferably administered IV as continuous rate infusion. Vitamin B complex can be added to prevent thiamine deficiency, but this complication occurs infrequently. Hypoproteinemia cats sometimes require plasma or whole blood transfusions to improve oncotic pressure. Plasma transfusions in combination with heparin can control DIC, as they supplement anti-thrombin III and other important plasma protein.<sup>(4)</sup>

Two weeks after the blood transfusion, the cat's condition improved. Gaining weight, good appetite, hard stool (score 2/7), the gangrene tissue granulating well, fresh and shrink.



Fig 3: (A) One week post transfusion. (B) One month post transfusion

## CONCLUSION

Whole blood transfusion for a cat with secondary DIC due to the infectious disease like Panleukopenia can be a life-saving procedure. Not only it increases instantly the amount of the red blood cell but also whole package of it with albumin, protein product and coagulation factor which very crucial in improving the condition. The study proved that the condition of this cats improved significantly post transfusion.

## REFERENCES

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