

## **Treatment with Cyclosporin A for Refractory Immune-mediated Hemolytic Anemia in Dogs**

Man-gil Han, Jae-hee Lee, Gi-jong Lee, In-sung Jung\*

*Department of Internal Medicine, Royal Animal Medical Center*

**Introduction:** Immune-mediated hemolytic anemia (IMHA) is a common hematological disorder in dogs and presents major therapeutic challenges. Clinical signs of IMHA include lethargy, inappetance, pale mucous membrane, exercise intolerance, tachycardia, tachypnea, and fever. Diagnosis is usually based on an acute onset of anemia generally characterized by a regenerative response. Spherocytosis and autoagglutination are consistent laboratory findings in IMHA. Treatment of IMHA is directed at suppression of the immune response. Glucocorticoids, cyclophosphamide, and azathioprine are the most commonly used agents in treatment. Supportive therapy includes fluid therapy, antibiotic therapy, and blood transfusions. Alternative treatments for dogs with refractory IMHA include therapeutic plasmapheresis, danazol, cyclosporin A, intravenous immunoglobulin, and possibly splenectomy.

Cyclosporine A suppresses cell-mediated immune response by interfering with activation of lymphocytes and macrophages. Current doses recommended are 5~10mg/kg given orally once to twice daily. It is recommended that trough concentrations of 100 to 300 ng/mL be maintained. Treatment with cyclosporin A may be discontinued when patient has been in remission for at least 2 weeks.

**Materials and methods:** A 6-year-old, intact female, Beagle dog was presented with a 3-day history of severe icterus (mucous membrane and skin) and hematuria.

**Results:** Laboratory findings included autoagglutination, hemolytic serum, hyperbilirubinemia (total bilirubin 77.0mg/dl), hemoglobinuria, bilirubinuria, severe anemia, and spherocytosis. And we diagnosed refractory IMHA because of severe hyperbilirubinemia and treated with three immunosuppressive agents, aspirin, antibiotics, fluid therapy and blood transfusion. Immunosuppressive agents that we administered included prednisolone (2mg/kg, once a day, orally for 2 weeks, then tapered), azathioprine (2.5mg/kg, once a day, orally; tapered every other day after 7 day), and microemulsified cyclosporin A (CIPOL-N SOLN: 5mg/kg, twice a day, orally). We transfused with whole blood once on second day. We discontinued to administer cyclosporin A, when patient had a stable packed cell volume (PCV) for 2 weeks. Now we had treated with azathioprine and aspirin for 6 months and rechecked at intervals of 1 month.

**Clinical relevance:** Treatment with cyclosporin A can provide an effective therapeutic choice for refractory IMHA.

\*Corresponding author: jung4545@korea.com