



# MSC Therapy in Autoimmune Hemolytic Anemia: Early Veterinary Case Experience



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## INTRODUCTION

Autoimmune hemolytic anemia (AIHA) is an immune-mediated destruction of red blood cells. Standard treatment relies on corticosteroids and immunosuppressants, but some cases remain refractory. Mesenchymal stromal cells (MSC) have immunomodulatory properties and may provide an alternative treatment.

## AIM

To evaluate the safety and preliminary clinical efficacy of intravenous allogeneic adipose-derived MSC in dogs and cats with severe AIHA refractory to corticosteroids and standard immunosuppressive therapy, and to explore potential translational insights for future studies in other species.

## METHODS

- **Patients:** Two dogs and one cat with severe, transfusion-dependent AIHA
- **MSC source:** Cryopreserved allogeneic adipose-derived MSC
- **Administration:** Two intravenous infusions administered 6–16 days apart
- **Characterization:** Flow cytometry confirmed expression of MSC markers and high cell viability
- **Follow-up:** Clinical status, hematology, adverse effects, and survival

## RESULTS

### Case 1 – Dog (Welsh Corgi):

- Two MSC infusions (8 ml) with no observed adverse effects
- Complete remission maintained for 12 months without medication

### Case 2 – Dog (Mixed Breed):

- Two MSC infusions (8 ml) with no observed adverse effects
- Hematologic normalization; Medication tapered/discontinued

### Case 3 – Cat (Maine Coon–Ragdoll):

- Two MSC infusions (5 ml) with no observed adverse effects
- Marked clinical improvement

Case	Species / Age / Weight	Dosage (MSC/ml × volume)	MSC/kg	Outcome
1	Dog, ♀ Welsh Corgi Pembroke 8 mo 8 kg	Dose 1: $4.36 \times 10^6 \times 8$ ml Dose 2: $10.05 \times 10^6 \times 8$ ml	Dose 1: $4.36 \times 10^6$ Dose 2: $10.05 \times 10^6$	Gradual hematologic and clinical improvement; complete remission maintained > 1 year without corticosteroids and immunosuppressives; ongoing follow-up
2	Dog, ♀ Mixed Breed 10 mo 13 kg	Dose 1: $4.56 \times 10^6 \times 8$ ml Dose 2: $14.77 \times 10^6 \times 8$ ml	Dose 1: $2.81 \times 10^6$ Dose 2: $9.09 \times 10^6$	Hematologic and clinical improvement; corticosteroids gradually reduced, cyclosporine discontinued; stable 2 months post-treatment; ongoing follow-up
3	Cat, ♂ Maine Coon × Ragdoll 1 yr 5 kg	Dose 1: $1.00 \times 10^6 \times 5$ ml Dose 2: $9.74 \times 10^6 \times 5$ ml	Dose 1: $1.00 \times 10^6$ Dose 2: $9.74 \times 10^6$	Significant improvement in anemia and overall condition; not fully normalized after 1 month; no further transfusions needed; ongoing follow-up

## CONCLUSIONS

MSC therapy was safe and well tolerated in all cases.

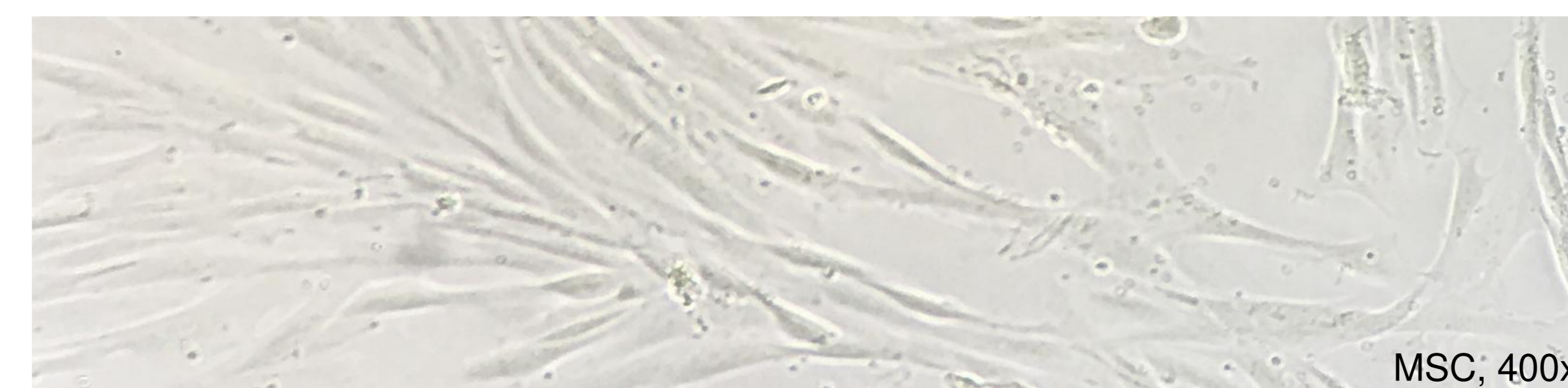
Clinical improvement was observed in all animals, supporting MSC as a promising supportive treatment for refractory AIHA.

Findings support further controlled studies to confirm efficacy, optimize dosing, and assess long-term safety.

Results may provide translational insights for related immune-mediated hemolytic conditions and guide future therapeutic strategies.

## REFERENCES

1. Mizuno T, Inoue M, Kubo T, et al. Improvement of anemia in five dogs with nonregenerative anemia treated with allogeneic adipose-derived stem cells. *Vet Anim Sci.* 2022;17:100264
2. Lee Y, Kang E, Ju J, et al. Stem cell therapy for dogs with immune-mediated hemolytic anemia. *J Anim Reprod Biotechnol.* 2024;39(1):58–61



## ACKNOWLEDGEMENTS

The authors appreciate the attending veterinarians for case management, the laboratory staff for MSC support, and the animal owners for their cooperation and trust.

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