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Skin-Dominant Serum Sickness Following Horse Antithymocyte Globulin in Severe Acquired Aplastic Anemia

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1. Case Presentation

A male in his late 30s patient with very severe acquired aplastic anemia and a small paroxysmal nocturnal haemoglobinuria clone was admitted for immunosuppressive therapy. There were no associated comorbid conditions found, and HLA typing did not reveal any matched sibling donor. Investigations done at admission are given in table 1.

The patient had received 12 packed red blood cell transfusions and 6 single-donor platelet transfusions before admission. The patient was initiated on horse-derived Antithymocyte Globulin (ATG) administered at a dose of 40 mg/kg/day for four consecutive days, in combination with cyclosporine (5 mg/kg/day) given in two divided doses. Along with the aforementioned treatment, Eltrombopag (150 mg/day) was prescribed to potentiate trilineage hematopoiesis. To minimise the risk of ATG infusion–related cytokine release reactions and serum sickness, prednisolone (1 mg/kg/day) was commenced concomitantly from the first day of ATG administration, as per institutional protocol.

On the 5th day of horse ATG administration, the patient developed intense diffuse, erythematous, pruritic, morbilliform and macular erythematous eruptions predominantly involving the trunk and all 4 extremities including thighs, covering approximately 55% to 60% BSA [Figure 1 (patient didn't consent for image of thighs and trunk)], accompanied by severe arthralgia localised to the bilateral knee and ankle joints.

The symptoms were clinically consistent with serum sickness secondary to heterologous protein exposure. Consequently, the patient was transitioned to high-dose intravenous methylprednisolone at 2 mg/kg/day, which was maintained for one week. This intervention resulted in rapid symptomatic improvement, with defervescence of the cutaneous lesions within 48 hours and progressive resolution of joint symptoms over the subsequent days.

Equine ATG combined with methylprednisolone and cyclosporine remains the recommended regimen for young adults with severe aplastic anaemia who lack an immediately available hematopoietic stem cell donor [1]. The use of horse ATG has been associated with Serum Sickness (SS) in 1% to 10% of treated patients. Established risk factors include older age, higher levels of heterologous protein exposure, the specific ATG preparation used, prior sensitization to the antigen or source animal [2].

Clinically, SS most commonly presents with fever and malaise (100%), followed by cutaneous eruptions (93%) and arthralgias or myalgias (67%) [3]. According to Bielory et al. (1988), SS typically begins on day 7 ± 1 and lasts 10 ± 2 days in patients receiving the shorter ATG course, whereas onset shifts to day 9 ± 1 in those receiving longer treatment [4]. In our case, however, symptoms appeared within 5 days of ATG initiation, with cutaneous lesions resolving within 2 days and complete symptomatic improvement within a week-earlier than the timelines commonly reported.

Prior case reports also demonstrate considerable variability, with rash onset documented at 10 days [5], 3 days [6], and 8 days [1]. While these reports do not show dramatic deviations, the inconsistencies highlight gaps in existing evidence. As most foundational studies are decades old, contemporary research is needed to better characterize SS onset and clinical evolution in ATG-treated patients.

Cutaneous involvement also shows notable variation. In one study, 75% of patients developed a distinctive serpiginous band of erythema and purpura along the sides of the fingers, toes, palms, and soles [4]. Another report described a non-pruritic rash over the trunk and bilateral legs appearing 10 days after starting ATG [5], while a separate case noted involvement of the extremities and lower abdomen [6]. Yet another account detailed pruritic rashes seen on the anterior lower trunk, groin and

the back [1]. Our patient exhibited a much more extensive and widespread pattern. These heterogeneous presentations further reinforce the need for updated studies to delineate cutaneous patterns associated with ATG-induced SS.

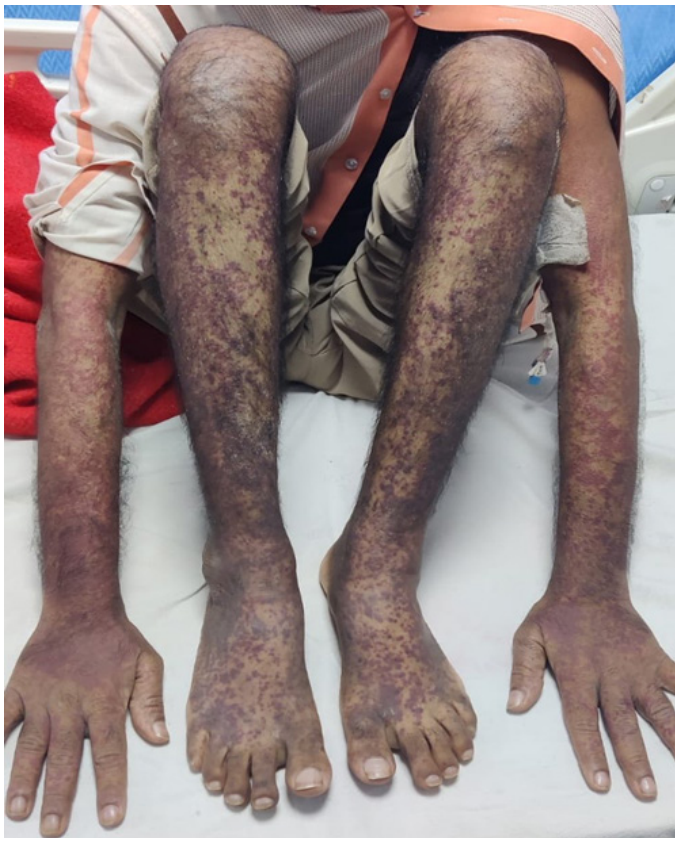

Figure 1: Diffuse, erythematous, pruritic, morbiliform and macular eruptions on all 4 extremities.

Table 1: Patient's Investigations

Parameters	Observed range	Normal range
Hemoglobin	6.8 g/dL	13 - 17 g/dL
Total leukocyte count	1,080/µL	4000/µL - 11000/µL
Absolute neutrophil count	120/µL	1500/µL - 8000/µL
Absolute reticulocyte count	8,000/µL	25000/µL - 75000/µL
Platelet count	12,000/µL	150,000/µL - 350,000/µL
HBsAg	Non reactive	
HCV	Non reactive	
HIV	Non reactive	
Chromosomal fragility using mitomycin C	Negative	
High-resolution computed tomography (HRCT)	No abnormalities detected	
Bone marrow aspiration and biopsy	Markedly hypocellular marrow with overall cellularity less than 10%, a complete absence of megakaryocytes, and no evidence of marrow fibrosis, consistent with acquired aplastic anaemia.	
Flow cytometric fluorescent aerolysin (FLAER) assay	Minor paroxysmal nocturnal hemoglobinuria clone comprising 2.4% of granulocytes and 3.2% of monocytes, suggesting a small PNH population.	

References

1. Aydın MS, Doğan İ, Ceran F, Dağdaş S, Özet G. High dose corticosteroid therapy for anti-thymocyte globulin associated severe serum sickness in an adult patient with aplastic anemia. Haydarpasa Numune Med J. 2024;64(3):437-9.
2. Rizkallah J, Cordova F, Malik A, Zieroth S. Serum Sickness After Antithymocyte Globulin Administration in a Cardiac Transplant Patient. Transplantation. 2021;94(11):e68-9.
3. Bielory L, Yancey KB, Young NS, Frank MM, Lawley TJ. Cutaneous manifestations of serum sickness in patients receiving antithymocyte globulin. J Am Acad Dermatol. 1985;13(3):411-7.
4. Bielory L, Gascon P, Lawley TJ, Young NS, Frank MM. Human serum sickness: a prospective analysis of 35 patients treated with equine anti-thymocyte globulin for bone marrow failure. Medicine (Baltimore). 1988;67(1):40-57.
5. Shanshal M, Ebadian M. Serum Sickness. N Engl J Med. 2023 Aug 24;389(8):749.
6. Nabavizadeh SH, Karimi M, Amin R. Cutaneous Finding in Anti Thymocyte Globulin Induced Serum Sickness. Iran J Allergy Asthma Immunol. 1;5(1):39-40.