Posters

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Case Report: Autoimmune anemia and thrombocytopenia following hematopoietic stem cell transplant

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Children's Mercy Kansas City

Purpose

- **Autoimmune cytopenias** (AIC) post hematopoietic stem cell transplant (HSCT) are rare but exceptionally challenging complications.
- Here, we report **anti E**, **warm autoimmune hemolytic anemia** (WAIHA), **cold autoantibody**, **polyagglutination** and **immune thrombocytopenia** in a **5-year-old boy** with a history of **chronic granulomatous disease**, who underwent an **ABO incompatible, mismatched (9/10) unrelated HSCT**.

Methods

- **Case Report**
- **4 months following HSCT** patient was admitted for **fever**, **fatigue**, and **decreased appetite**.
- **Patient's** original blood type was **O+** and **donor's** blood type was **B+**.
- **Hematopoietic chimera evaluation** demonstrated **100% donor-derived cells.**
- Initial laboratory work-up revealed:
  - White blood count **10.07x10^3/uL**
  - Hemoglobin **4.2 gm/dL**
  - Platelets **137x10^3/uL**
  - Absolute retic count **0.123x10^6/mcL**
  - Total bilirubin **1.8 mg/dl** (mainly indirect)
  - Lactate dehydrogenase **1,037 unit/L**
- **Several months later**, the patient developed **thrombocytopenia with a platelet count of 45x10^3/uL**.

Results

Test	Results	Comments
ABO typing	Invalid	Spontaneous agglutination of patient's red cells
Antibody screen and work-up	Positive	Anti E
Direct antiglobulin test (DAT)	Invalid	Spontaneous agglutination of patient's red cells
Eluate	Positive at 22˚C and 37˚C	Cold antibody present and warm antibody confirmed
Cold antibody titer	Negative	Titer < 2
Thermal amplitude	Negative	No reactivity at 30˚C and 37˚C
Donath Landsteiner test	Negative	
DTT treated eluate **22˚C** **PEG IAT**	 Decreased reactivity Weak reactivity	Supports the presence of IgM and IgG antibodies in the eluate
Polyagglutination testing (Patient red cells mixed with donor plasma)	Strongly positive	AB plasma: 9/10 reacted B plasma: 4/4 reacted
Lectin studies **Arachis hypogea** **Glycine soja** **Salvia sclarea** **Salvia horminum**	 Strongly positive Negative Negative Negative	Spontaneous polyagglutination but not due to the classic T activation. Tx, Tk or Th variants of T activation were neither ruled out nor confirmed.
Platelet antibody studies **SPRCA test** **ELISA test**	 Negative Positive	 Anti HLA, not present Anti GPIIb/IIIa, present

Discussion

- This is a report of a **5-year-old male post-HSCT** who developed **overt hemolytic anemia** with laboratory testing that demonstrated evidence of **WAIHA**, **anti-E antibody**, clinically insignificant **cold autoantibody**, and **polyagglutination**.
- **Classic T activation** was **ruled out**.
- Several months later, **hemolysis subsided** but **immune mediated thrombocytopenia ensued**.
- This case **demonstrates the complexity of AIC** that rarely develops **in patients who underwent HSCT**.

Summary

- Autoimmune cytopenias are a rare but exceptionally challenging complications of HSCT.
- This report demonstrates a case of anti-E, WAIHA with cold antibodies and polyagglutination who later developed immune-mediated thrombocytopenia.

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