

# Cold Agglutinin Disease Debut During Aortic Valve Replacement Surgery: A Case Report

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## BACKGROUND

- Cold agglutinin disease affects 0.3% of patients undergoing cardiac surgery with CPB
- Associated with increased risk of complications such as stroke, MI, AKI, low-cardiac output syndrome, sepsis and thromboembolic events
- Universal preoperative screening is not performed. Active vigilance and early recognition is crucial

## CASE DESCRIPTION

67 yo. Male scheduled for aortic root replacement.

PMH: DVT, COPD d/t alpha-1 antitrypsin deficiency and HTN

Administration of 4°C cardioplegia→ surgical team noted intravascular coagulation upon opening of aortic root (Image A).

- **Management:**
  - Rewarming on CPB
  - Ambient heating
  - Additional cardioplegia doses at 32°C



- Intraoperative hematology and transfusion medicine consults
- Re-evaluation of 1 month pre-operative T&S was unremarkable, however, repeat T&S intraoperatively demonstrated a cold autoantibody
- Lab: Cold agglutinin titer of 1:256, elevated LDH and low haptoglobin
- No monoclonal proteins and flow cytometry panels were negative
- No Hx of cold temperature-related symptoms, anemia or hemolysis
- Patient reported respiratory symptoms approximately a week prior
- CT negative for lymphoproliferative disease
- Discharged on POD 5
- Subsequent bone marrow biopsy was normal

## DISCUSSION

Significance of cold agglutinin titers (>1:64) and thermal amplitude will guide intraoperative strategies

- **Intraoperative strategies:**
  - Warm blood cardioplegia
  - Avoid deep hypothermia
  - Warming blankets and ambient heating
  - Discontinue cold crystalloid cardioplegia
- **Additional interventions may include:**
  - Retrograde cardioplegia to remove microemboli
  - Plasma exchange
  - Corticosteroids
  - Immunotherapies (rituximab) or monoclonal antibodies against complement (sutimlimab)
- Timely consultation to guide management and exclude potential causes
- In most cases, rewarming and anemia correction are sufficient, as the condition is often self-limited

## CONCLUSION

Continuous multidisciplinary communication and awareness is crucial for early management and to prevent potential complications

## REFERENCES

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