



HLA Class II Antibodies in TRALI

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TRALI - Case Study

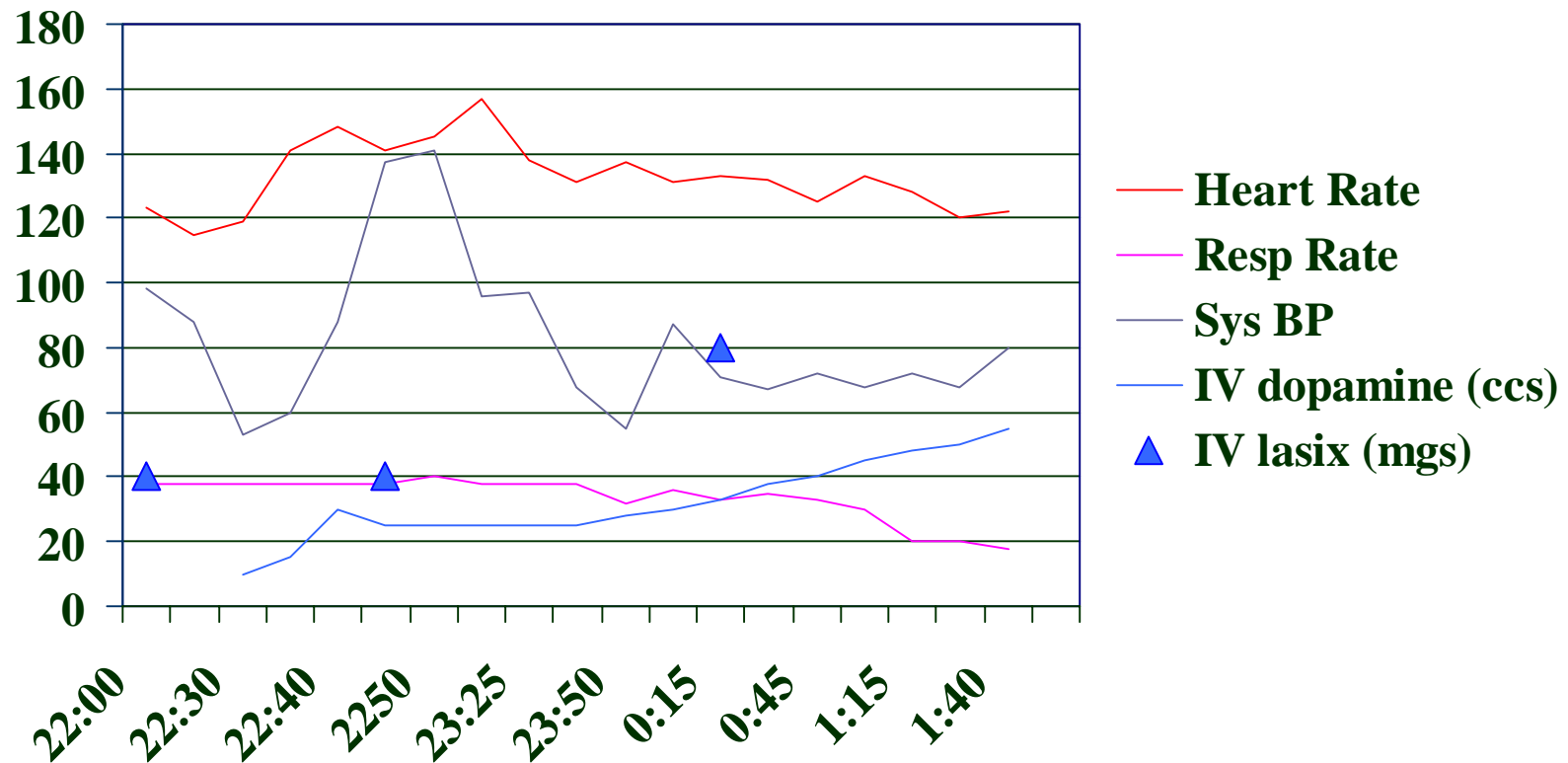
- 69 year old female
- hospitalized with 2 week history of vaginal bleeding and recent near syncope
- Labs
 - Hgb 13.1 g/dL
 - platelets 156,000/ μ L
 - INR 4.0, was 5.8 two days prior



TRALI - Case Study

- Past medical history
 - prior hospitalization for syncope secondary to an arrhythmia
 - coumadin therapy
- Patient was transfused with 1 unit (200 mL) of FFP and experienced a severe TRALI reaction
- Intubated and transferred to ICU

TRALI REACTION



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TRALI CASE WORK UP

- FFP donor negative for HLA class I (AHG-CDC) and granulocyte antibodies
- PMN “priming” activity has never been shown in FFP
- Recipient received no other blood products



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Can HLA Class II Antibodies Cause TRALI?

- Flow cytometry showed that donor serum contained class II HLA antibodies, to DR53 and DR51.
- The recipient's HLA DR phenotype was DR-1, -4, -53.



Single Donor TRALI Cases

- 17 cases
 - granulocyte Abs in donor (2)
 - granulocyte Abs in recipient (1)
 - HLA I Abs in donor (1)
 - HLA II Abs in donor (4)



Single Donor TRALI Cases

- 17 cases
 - HLA I and II Abs in donor (5)
 - HLA I and II Abs in recipient (1)
 - HLA II in donor; HLA I and II in recipient (1)
 - no HLA or granulocyte Abs (2)

TRALI Prevention

- 10 of 17 cases would not have been prevented by screening blood donors for granulocyte Abs and HLA class I Abs by AHG-CDC
- FlowPRA™ used to detect HLA class I and II Abs is a research test which is extremely labor intensive



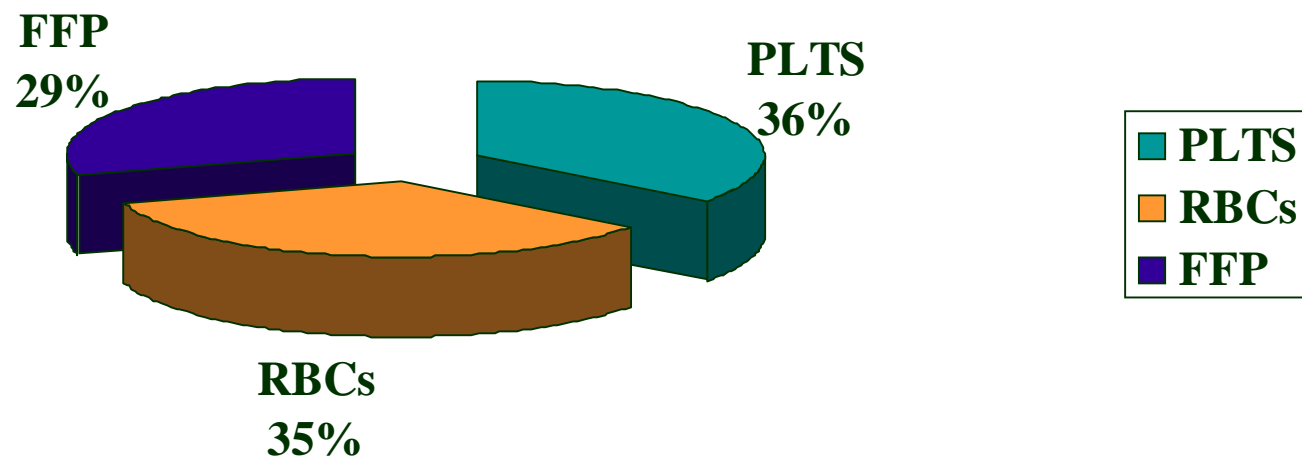
Cases not detected by Ab screening

- No Ab detected (2)
- HLA class II Ab only (4)
- Granulocyte Ab in recipient (1)
- HLA Abs in recipient (1)
- HLA class I Ab detected on flow (1)
- HLA class II in donor, class I and II in recipient (1)



Single Donor TRALI Cases

Components Implicated



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Do antigen-antibody reactions cause TRALI?



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Do Antibodies Cause TRALI?

- The presence of Abs in donors implicated in TRALI is too high to be coincidence.
- The presence of antibodies in donors implicated in TRALI does not prove a causal relationship.
- Do the Abs found in the donor correspond to the recipients white blood cell antigens?



DO Antibodies Cause TRALI

- 11 cases with recipient wbc typing
- 4 cases donor Ab corresponds to recipient antigen
- Ab specificity can be hard to determine if multiple antibodies are present



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TRALI Cases

	Ab in donor	Ag in recipient
1	HLA A24	HLA A24
2	Gran 5b	Gran 5b
3	HLA DR51	HLA DR51
4	HLA B62, DQ3	HLA B62, DQ3(?)



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TRALI Look Back



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TRALI Look Back

- 54 y/o G3P2A1 female implicated in a TRALI reaction
- Work up revealed a strong granulocyte 5b antibody in her plasma
- First time donor had been implicated in TRALI
- Frequent donor of more than 15 years

TRALI Look Back

- FDA requested look back for evidence of TRALI in prior recipients of this donor's plasma



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TRALI Look Back

- Transfusion service medical directors asked to review recipient's charts to look for evidence of TRALI



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TRALI Look Back

- Donor made 28 plasma donations that were transfused in the previous 12 months
- The recipient's clinical condition precluded evaluation of TRALI in 4 cases



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TRALI Look Back

- 9 of 24 (37.5%) transfusions were associated with a transfusion reaction
- Mild to moderate reactions (fever, chills, dyspnea or O₂ desaturation) were reported in 4 (16.7%) transfusions
- Severe reactions (acute pulmonary edema or mechanical ventilation) were reported in 5 (20.8%) transfusions

TRALI Look Back

- Only 4 of 9 (44%) reactions (3 mild, 1 severe) were reported to the hospital transfusion service
- Only 2 of 9 (22%) reactions were reported to the blood supplier



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TRALI Summary

- HLA Class II antibodies are associated with TRALI
- Screening blood donors for white cell antibodies will not prevent numerous cases of TRALI
- TRALI is under recognized
- TRALI is under reported

