Does TRALI occur in children? A Canadian perspective

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Canadian Blood Services

Canadian Society for Transfusion Medicine

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Canadian Blood Services
it's in you to give

Why is TRALI so important?

- Leading cause of transfusion related mortality with fatality rates increasing annually

- Preventable
  - Primary & secondary prevention strategies

- Under-recognized & underreported

Blood 2012 119: 1757-1767
Blood 2011;117:1463-1471
Transfusion 2011; 1-8
Transfusion 2011;51:1278-1283
JAMA 2002; 287: 1968-71
Arch Dis Child 2004;89:856–859
Transfusion 2006; 46: 1899-1908

Does TRALI occur in children?

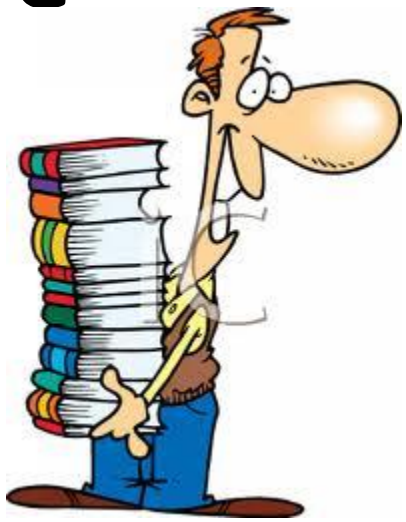
Incidence

Presentation

Implicated product

Mortality

Review of the literature



- Case reports
- Case series

Largest case series
SHOT 1996-2005

- 165 adults, 20 children
- Similar rates of TRALI in children and adults
- Higher mortality rates in adults
- Most likely to occur secondary to plasma rich products

BJH 2008: 141 73-79

Research proposal

- Retrospective chart review of TRALI cases reported to the Canadian Blood Services (CBS) between 2001-2011

Objectives

- Compare pediatric to adult cases w respect to
  - Demographic features
  - Clinical presentation
  - Associated product
  - Outcomes

**Pediatric patient defined as ≤ 18 years old

TRALI at Canadian Blood Services

Secondary prevention

- 2001: Canadian Blood Services established formal investigation protocol for TRALI
- 2004: Canadian Consensus Conference
- 2006: TRALI Medical Review Group formed and evaluated each case as it was reported

Primary prevention

- 2005: Buffy coat production pilot started in Edmonton and rolled out nationally November 2007 – June 2008

TRALI at Canadian Blood Services

- Primary prevention
  - 2007: Predominantly male plasma for transfusion and plasma for suspension of buffy coat platelets
  - 2009: Plateletpheresis from male donors and never pregnant females
- Serologic investigations performed centrally
  - 2008: Ab testing moved from variety of methods to HLA antibody screening and specificity detected by Luminex technology

CBS da -2011

17 children
267 adults
Pediatric TRALI 6.4%

	Su de				Total
Number of suspected cases		26		408	434
Classification of cases	Definite Possible Probable	6 4 7	**17**	84 61 122	**267**	284
Trali mortality					15
Associated product					148 29 35 70 1

Mortality rate
6% children
5% adults

RBC most commonly associated product
Children 47 % RBC
Adults 52% RBC

Patient demographic

Recipient Demographics			s 7
Gender			
Age (yrs) Mean		11.5 0-1 yo = 5 5 yo = 1 14-18 yo = 11	59
Patient type	Surgical /	7	118

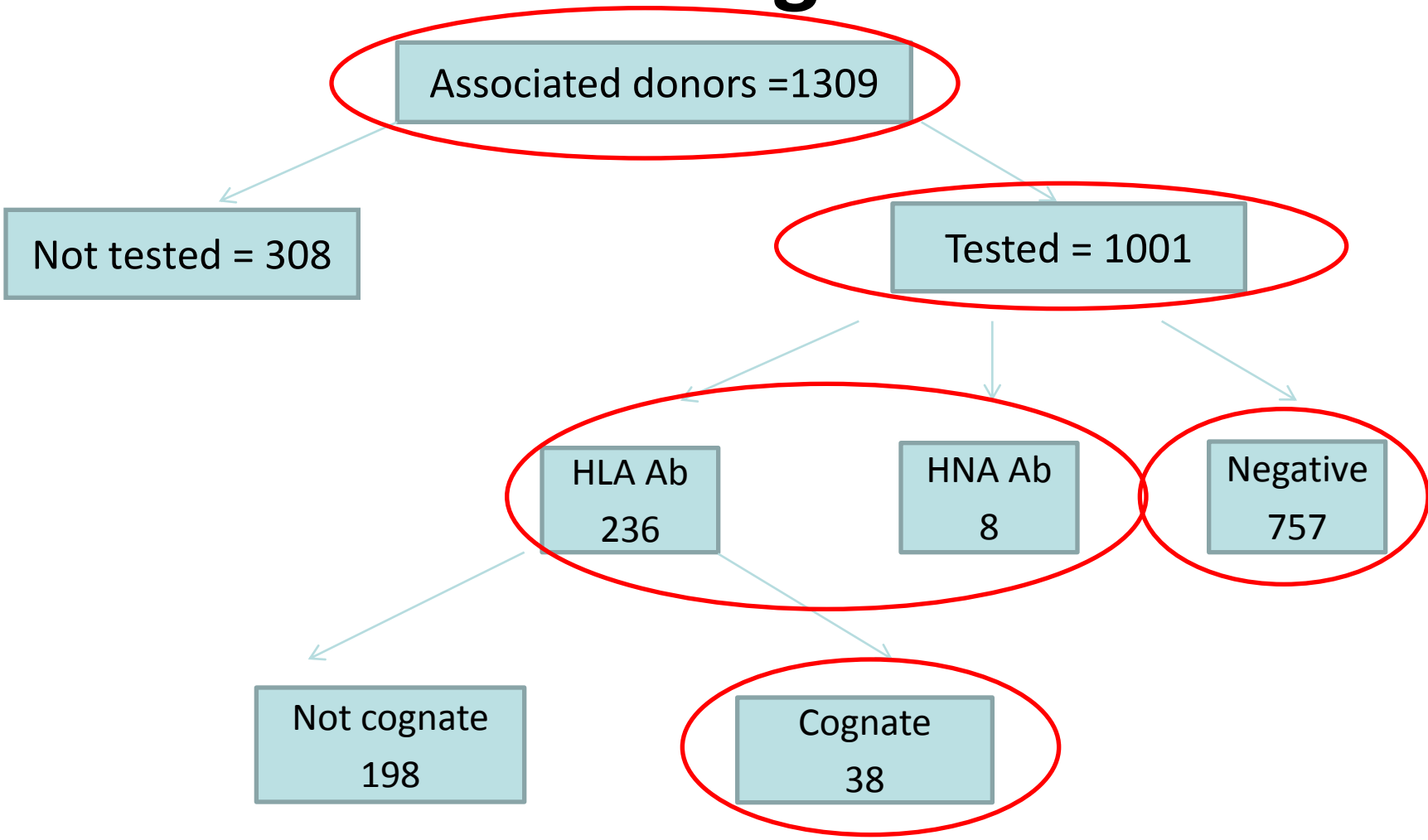
No differences wrt
Gender
Underlying condition

Age distribution
Children < 1 yo 29%
Teenagers 65%

Clinical presentation, treatment & outcomes

- Pediatric and adult patients presented similarly
  - All met TRALI criteria
  - Both groups were likely to be
    - Transferred to the ICU
    - Intubated
- Children were less likely to have (p -not significant)
  - Fevers
  - Chills

Donor investigation



Recipients with associated donors

	Cognate HLA Ab or HNA Ab 18% children 14% adults			tal
Adult (N = 267)	29 29/267 = 11%	7 7/267 = 3%	88 88/ 267 = 33%	124/267 = 46%
Child (N = 17)	2 2/17 = 12%	1 1/ 17 = 6%	6 6/17 = 35%	9/17 = 53%

No significant differences between adult and children

Highlights

88% cases referred by tertiary care centers

But only 47% → pediatric tertiary care centers

50% referred by a single city in Canada

Most referrals ≤1 year old = “probable”

Summary

Similarities

- Clinical presentation
- Associated product
- Antibody profile
- Outcomes

Summary

But……

- Age distribution – teenagers & children < 1
  - Underreporting ?
  - Different pathophysiology?
- Children < 1 → Probable

What are optimal TRALI definitions for children ?

Conclusion

- TRALI is a rare diagnosis in children
  - Needs to be included in ddx for all respiratory events following blood transfusions
- Education is needed for pediatricians
- Limitations
  - small sample size, retrospective, denominator
- Future studies

Acknowledgements

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Questions?

If it was only that easy!!!

Courtesy Dr. C Josephson