NHS Blood and Transplant

Crossmatching strategies prior to deceased donor kidney transplantation

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Caring Expert Quality

Clinical case

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- June 2018 – ‘ideal’ DBD kidney donor aged in their 40’s
- 1200 – cross-clamp; organ then transported 100 miles away
- 2300 – implanting unit reported a positive crossmatch on LN / spleen
  - Policy of using PBLs for XM, but only from ‘local’ donors (due to cost concerns)
- Re-offered to child at another centre; declined due to prolonged CIT
- Declined by 3 other centres in KFTS due to prolonged CIT
- Eventually accepted and implanted by fourth centre

Background

- No current UK guidance on optimal XM strategies prior to deceased donor kidney transplantation
  - PBL XM in live donor programmes; increasing use of virtual XM (VXM)
- Negative PBL XM / VXM; reduces CIT by 2.5-3.5 hours in the UK
  - Taylor CJ, *Transplantation* 2010
  - Shrestha S, *Transplantation* 2016
- Positive PBL XM / VXM; optimal offering pathway and likely to reduce the risk of discard due to prolonged CIT

Background

- Costs:
  - Transporting PBLs 100 miles: £210 (Amvale)
  - 24-hour inpatient stay one day: £215 (Guy's Hospital)
  - One session of inpatient dialysis: £150 (Guy's Hospital)
- National survey of H+I laboratories
- KAG discussion
  - Support for national guidance via BSHI/BTS
  - Aim to avoid waiting for LN/spleen XM in deceased donor kidney transplantation
- **Update renal transplant community with planned developments**

Compatibility tests pre-transplant

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Strategy / source	Available prior to organ transport?	Timing	Technical	Logistical issues
Wet XM Splenic derived lymphocytes	No	4-6 hours after delivery to laboratory	Usually plenty of starting material. Good viability	Can be transported at same time as organs
Wet XM Peripheral blood lymphocytes	Yes – dependent on timings and logistics	4-6 hours after delivery to laboratory	Perceived quality/sensitivity issues.	Needs separate transport to more than one centre Transport cost
Virtual crossmatching	Yes	1 hour if using historic test results; 3 hours if fresh testing required	Detailed donor typing needed. Knowledge-based risk assessment for sensitised patients	May require collection / testing of fresh recipient sample

BSHI survey

- Current practices for deceased donor crossmatching
  - Local vs imported
  - Cell source (PBL / spleen / lymph nodes)
- Use of VXM (sensitised and unsensitised)
- Out-of-hours antibody testing
- Turn-around times

BSHI survey – results

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- 17/21 laboratories responded
- Results available 4-6 hours
- 5/17 (29%) routinely use PBL XM
- 11/17 use PBL XM for ‘local’ donors and 7 of these sometimes use PBL for imported donors
- Only one laboratory NEVER uses PBL XM

BSHI survey – results

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- Reasons for not performing PBL XM:
  - Concerns about quality and number of lymphocytes
  - Transport costs
  - Not beneficial as 85% of transplants proceed with VXM
  - Didn’t know it was an option for imported donors (one laboratory)
- VXM
  - 13/17 (76%) routinely use VXM for all unsensitised patients, with remaining 4 using VXM sometimes
  - 14/17 use for sensitised patients
  - 11/17 perform HLA Ab testing out-of-hours to support VXM, if required

Conclusions

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- Variation in both clinical / H+I practices
- National guidance supported by KAG / BSHI
- Next steps:
  - Workshop 22 March, Birmingham
    - Reps from H+I labs / clinical teams
    - Shared practices, evidence-based
  - Agree and publish national BSHI / BTS guidelines for deceased donor kidney crossmatching
    - Draft by KAG June 2019
  - **Aim to have crossmatch results before organs are removed**

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Kidneys Allocated: 2010-2015
Positive crossmatches

Year	Kidneys Allocated	Positive crossmatch n=	%
2010	976	36	3.7
2011	938	26	2.7
2012	956	23	2.4
2013	1138	25	2.2
2014	1180	24	2.0
2015	1112	16	1.4
Total	**6300**	**150**	**2.4**

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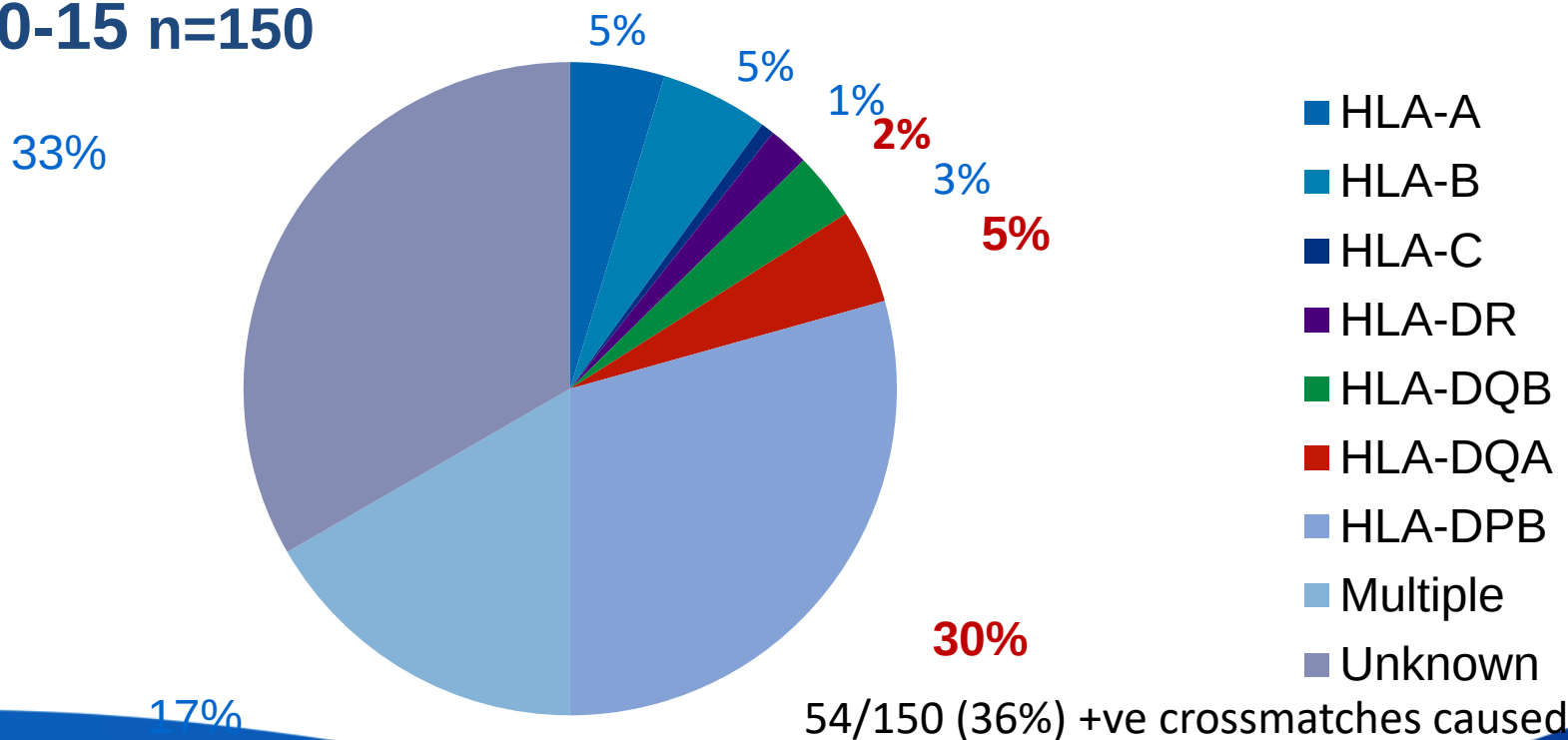
Reasons for a Positive Crossmatch:

2010-15 n=150



54/150 (36%) +ve crossmatches caused by specificities, DP, DQA and some DR alleles, outside the required minimum resolution

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