Cyanotic disease is an independent predictor of FFP and platelets transfusion in cardiac surgery children

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Goal of study

Cyanotic disease is associated with altered platelet function and low fibrinogen level that could increase the **risk of bleeding** and therefore the exposure to blood products (1).

Material and methods

- This retrospective observational study was conducted in a tertiary children hospital from 2002 to 2014.
- Patients who received fresh frozen plasma (FFP) in cardiopulmonary bypass (CPB) priming were excluded.
- Anaesthesia, CPB and surgery were standardized.
- **Transfusion** of red blood cell(RBC), FFP and platelets were **compared between acyanotic and cyanotic patients**.
- Multivariate analysis was used to determine if a **cyanotic heart disease predicted the transfusion of FFP and/or platelets**.
- Data are presented as median (interquartile ranges) or percentage. A $p < 0,05$ was considered statistically significant,

Results

- From the 2113 patients included in the study, 267 were excluded, leaving 1846 patients for analysis,
- Cyanotic children were younger, had a lower weight, higher ASA and RACHS-1 scores, prime CPB volume, higher intra-operative fluid balance and longer surgery, CPB and aortic cross clamp times

Chart flow

Preoperative data

	Acyanotic group	Cyanotic group	P-value
Hb (g/dl)	12,2(11,1-13,1)	15,0 (13,0-17,4)	<0.001
Platelets ($\times 10^3 \mu\text{L}$)	328 (263-410)	291(216-396)	<0.001
Fibrinogen (mg dL)	285 (245-338)	270 (230-321)	<0.001
INR	1,0(1,0-1,1)	1,1 (1,0-1,1)	<0.001

Univariate analysis

	Acyanotic group	Cyanotic group	P-value
Intraoperative blood loss (ml kg ⁻¹)	26.7 (14.8-44.7)	31.1 (17.6-50.4)	<0.001
Chest tube drainage (total) (ml kg ⁻¹)	16.9 (10.4-26.9)	31.2 (19.1-51.9)	<0.001
RBC in priming	594 (56.1%)	304 (39.1%)	<0.001

Perioperative allogeneic blood transfusion

On multivariate analysis, cyanotic cardiopathy was an independent predictor of

- **FFP (OR: 2.08 ; 95% CI: 1.44 - 3.01) and platelet (OR: 3.90; 95% CI: 2.27 - 6.69) transfusion.**

Conclusion

Children with a cyanotic heart disease have an increased risk to be exposed to FFP and platelet transfusion in the perioperative period of cardiac surgery.