Are We Far From Bloodless Acute Type A Aortic Dissection Surgery? ---A Systematic Approach to Reduce Blood Transfusions in Acute Type A Aortic Dissection

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Objective

- The aim of this study was to summarize our experience with a systematic approach to reduce blood transfusions in acute type A aortic dissection (ATAAD) surgery.

Method

- From August 2016 to June 2020, 326 patients underwent ATAAD surgery in our center using a systematic approach.
- The approach mainly included the following: Liu's aortic root repair technique, Liu's aortic arch inclusion technique with frozen elephant trunk, moderate to mild hypothermia circulatory arrest, and application of centrifugal pump in cardiopulmonary bypass circuit.
- Patients were divided into two groups according to whether they had blood product transfusion during their hospital stay: transfusion group and bloodless group.
- Preoperative, intraoperative, and postoperative outcomes were compared between two groups.

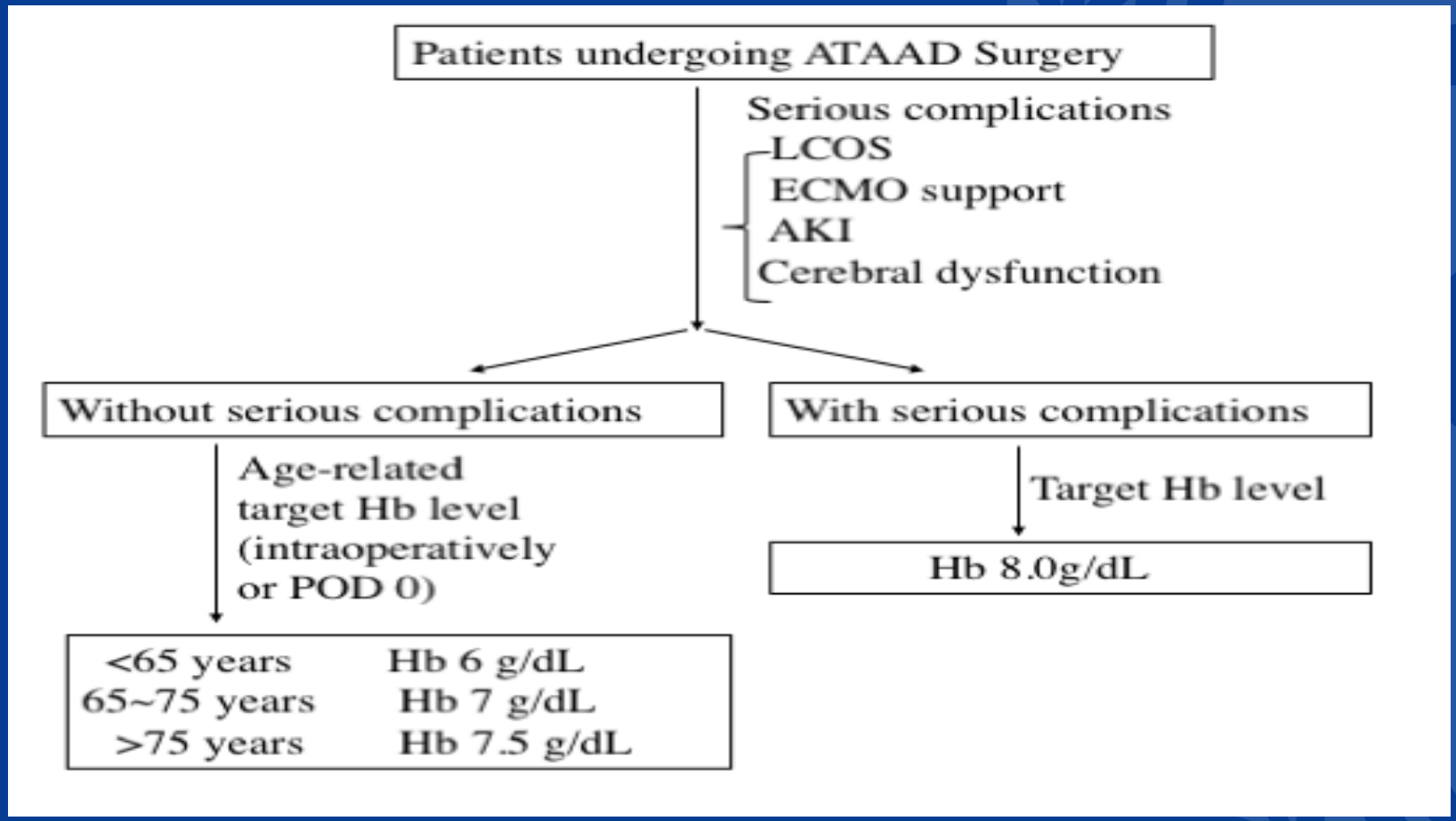
Results

- 152 patients were included in the transfusion group and 174 patients in the bloodless group; the bloodless rate was 53.37%.
- 98 patients in the transfusion group received intraoperative blood transfusion and the 54 patients postoperative blood transfusion.
- Patients in the transfusion group were significantly older than patients in the bloodless group, and there were more patients with preoperative anemia and malperfusion in the transfusion group.
- Overall in-hospital mortality was 5.21% (17/326), with 3 mortalities (1.72%) in the bloodless group and 14 mortalities (9.21%) in the transfusion group (P=0.0025). The transfusion group had significantly more MODS, sepsis and tracheotomy, and longer intensive care unit stays.
- Hb levels of patients between the two groups were similar at tested time points.

Conclusion

- With the implementation of systematic approach, bloodless ATAAD surgery can be achieved and safely applied in ATAAD patients. More efforts should be made to surgical technique modifications, application of moderate to mild hypothermia circulatory arrest, usage of centrifugal pump in cardiopulmonary bypass circuit and a restrictive blood transfusion protocol to achieve bloodless ATAAD surgery.

Illustration of the systematic approach



Hb levels were similar between two groups at different time points.