

Transfusion-Associated Dyspnoea (TAD) n=8

17c

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Definition:

TAD is characterised by respiratory distress within 24 hours of transfusion that does not meet the criteria for transfusion-related acute lung injury (TRALI) or transfusion-associated circulatory overload (TACO) or allergic reaction. Respiratory distress in such cases should not be adequately explained by the patient's underlying condition (International Society of Blood Transfusion (ISBT) definition).

There were 8 cases included as TAD for 2018, with only 2 of these initially reported as TAD. The other 6 cases were transferred from other reporting categories; 3 from TRALI and 3 from TACO.

Other cases reported initially as TAD were transferred to other categories, 1 case transferred to TRALI and 4 to febrile, allergic and hypotensive reactions (FAHR).

These transfers and the lack of data for many of the cases make it difficult to draw conclusions for the category of TAD. All cases are described in order to build up the series of cases over time. Cases related to death or major morbidity are included below, with the remaining 5 cases available on the SHOT website. This category is likely to be affected by the revised definitions of TRALI and TACO. (Vlaar et al. 2019; Wiersum-Osselton et al. 2019).

Deaths n=2

Case 17c.1: Death possibly related to the transfusion (transfer from TACO)

A woman in her 80s under investigation for pancytopenia developed bruising and a petechial rash. She was transfused with red cells (haemoglobin (Hb) 58g/L) and later with platelets but developed fever and was admitted. She became increasingly hypoxic with oxygen saturation falling to 76%. Chest X-ray showed widespread patchy shadowing. She had a cough with haemoptysis and chest pain. She also received intravenous immunoglobulin (IVIg) 1g/kg. Chest X-ray did not show evidence of fluid overload or consolidation. She declined further active intervention and died 2 days after admission. The TRALI review panel agreed that this case was more likely to be a combination of fluid overload and progressive lung infection on a background of pre-existing pulmonary fibrosis. The causes of death were recorded as 1a acute respiratory distress syndrome (ARDS), 1b pulmonary haemorrhage, TRALI and 1c immune thrombocytopenia.

Case 17c.2: An elderly man with haemorrhage who developed pulmonary and renal complications (transfer from TRALI; death possibly related to transfusion)

A man in his 80s was admitted to the intensive therapy unit from the emergency department with multiple organ failure following admission with hypovolaemic shock and a burst varicose vein. The major haemorrhage protocol was activated, and he rapidly received seven units of red cells (15-30 minutes per unit) in addition to four units of fresh frozen plasma and one of platelets. The pre-transfusion Hb was 110g/L. He was noted to have bilateral pulmonary infiltrates and crackles on auscultation. His troponin increased from 55 to 208ng/L and his pro-B-type natriuretic peptide (BNP) from 551 to 973pg/L and he required renal dialysis. He died within 24 hours of admission. This reads more like circulatory overload.

This case was considered for inclusion as a case of TACO but cardiovascular changes were not recorded and may have been modified by haemodynamic instability due to bleeding. There was also no record of fluid balance, no change in clinical condition with diuretic, and although there was some increase in BNP this was not >1.5 times the upper limit of normal. This patient probably had acute coronary syndrome which is consistent with the troponin results. The raised BNP may have been as a result of this event, worsening of pre-existing heart failure or failure to clear BNP because of renal failure. Although there is an increase it is difficult to interpret due to the other factors. Therefore, the case did not meet the ISBT criteria for TACO and was rejected by TRALI as the advisory team felt this was more likely to be circulatory overload.

It is inevitable that some cases with confounding factors or lack of clinical information provided will not strictly fit TACO or TRALI. Although these cases cannot be precisely classified it is important that they are acknowledged as this will help us understand the limitations and improvements needed in the other classifications.

Major morbidity n=1

Case 17c.3: Transfusion for menorrhagia results in respiratory failure (transfer from TRALI; major morbidity)

A woman in her 40s received a transfusion of six units of red cells for menorrhagia (continuous bleeding for 22 days). Her Hb was 45g/L (90g/L post transfusion). She had a history of chronic anaemia and previous transfusions. A pre-transfusion chest X-ray showed diffuse patchy infiltration/consolidation. She developed shortness of breath within 2 hours of transfusion with saturation of 90%, no fever, heart rate 87 and normal blood pressure. Chest X-ray post transfusion showed asymmetrical pulmonary oedema. She required continuous positive airway pressure (CPAP) and then mechanical ventilation for 3 days. Her condition worsened despite steroids and diuretics. The donor of the triggering unit was an untransfused male so the local Blood Service decided this was not TRALI.

There was no improvement with diuretics which does not fit the criteria for TACO. However, this case is similar to TACO Case 17b.1, and is a warning to assess the need for transfusion of repeated units in patients with chronic anaemia who decompensate if transfused too much too rapidly.

Other cases

Further TAD cases can be found in the supplementary information on the SHOT website www.shotuk.org.

Commentary

Several cases with pulmonary features are moved between categories particularly when their descriptions do not meet the definition criteria. It is very helpful when reporters are able to provide as much detail as possible. There are cases both this year and in 2017 where further investigation for TRALI might have been warranted. It will be important to consider how the new international definition of TRALI impacts on these cases.

References

Vlaar APJ, Toy T, Fung M, et al. (2019) A consensus redefinition of transfusion-related acute lung injury. *Transfusion* 2019 doi.org/10.1111/trf.15311.

Wiersum-Osselton J, Whitaker BL, Grey S, et al. (2019) Revised international surveillance case definition of transfusion associated circulatory overload (TACO): a classification agreement validation study. *Lancet Haematol* 2019 doi:10.1016/S2352-3026(19)30080-8.