

Packed Cells Transfusions – Not Without Risks

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Packed red cell transfusion is often considered as a treatment option for symptom management in the palliative care setting. However, limited evidence suggests that the potential risks of this procedure may exceed the benefit of symptom relief in certain populations (1).

Case 1:

A 70 year old man with a Stage IV non-small cell cancer of the right lung was admitted to a hospice in Edmonton. He was known to have extensive intrathoracic metastatic disease, as well as adrenal metastases. He had shortness of breath, which responded to dexamethasone 10 mg sc bid, and hydromorphone 1 mg sc every four hours. However he complained of asthenia which severely limited his physical activity. He was known to have a hemoglobin level of 100, and was transfused with two units of packed red cells on the day after admission. He had no side-effects from the transfusion, and regained the ability to interact with his family and enjoy activities such as crossword puzzles and reading. A month later he again developed increasingly severe asthenia. His hemoglobin level had decreased to 91. He was given a further transfusion of three units of packed red cells, and received furosemide after each unit. He was noted to have increasing anxiety towards the end of the third transfusion. However five hours later he suddenly developed abdominal pain and shortness of breath. His oxygen saturation dropped from 97% on three liters of oxygen per minute to 84% on six liters per minute over the next four hours. He was severely anxious and agitated, and died eight hours later.

Case 2:

A 76 year old man with a Merkel cell carcinoma of the skin in the head and neck area was admitted to an Edmonton hospice. He was known to have multiple osteolytic bone metastases causing severe incidental pain. He completed radiotherapy during the hospice stay, and became pain free without requiring opioids. However, he became bed bound due to profound asthenia. Laboratory tests revealed a hemoglobin of 71 without any other significant abnormalities. He was given two units of packed red cells. During the transfusion he developed chest congestion. Initially this was thought to be hypervolemia, and he received multiple doses of furosemide. However he continued to deteriorate with progressive shortness of breath and chest congestion, and died 5 days later.

The etiology of asthenia is often multidimensional, and includes the underlying disease, oncological treatment, infection, renal or hepatic failure, sleep disorders, immobility, deconditioning, chronic pain, use of centrally acting drugs, and mood disorders(2).

One of the important adverse effects of red cell transfusion that often goes unrecognized, is transfusion-related acute lung injury (TRALI), which is an acute respiratory distress syndrome that occurs within four hours after transfusion. This syndrome is characterized by dyspnea and hypoxia due to non-cardiogenic pulmonary edema. Although the actual incidence is not well reported and may often go unrecognized, estimated frequency is

approximately 1 in 5000 transfusions (3). TRALI most likely results from several mechanisms. Blood-donor antibodies may react with the recipient's neutrophils, leading to increased permeability of the pulmonary microcirculation. Most recently, reactive lipid products from donor blood-cell membranes that arise during the storage of blood products, have been implicated in the pathophysiology of transfusion-related acute lung injury (4).

Treatment of TRALI is only supportive, and 90 % of patients recover in the general population. However, in palliative patients who are known to be immuno-compromised, TRALI may easily result in lethal events. Lack of recognition of TRALI may often result in inappropriate management with diuretics, which will be of no value and may be detrimental. Corticosteroids may be useful due to the proposed immune-related reaction.

The detailed adverse effects of transfusions will be available in the clinical practice guidelines of the Regional Palliative Care Program. Guideline for Red Blood Cell and Plasma Transfusion is available on the web site (5). Careful assessment of the need for red cell transfusions is the best way to protect vulnerable patients from exposure to unnecessary adverse events.

Reference:

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- 2) Hinshaw DB. Depression, anxiety, and asthenia in advanced illness. J Am Coll Surg. 2002;195:271-7.)
- 3) Popovsky MA, Moore SB. Diagnostic and pathogenetic considerations in transfusion-related acute lung injury. Transfusion 1997; 37:573-7.
- 4) Silliman CC, Paterson AJ, Dickey WO, et al. The association of biologically active lipids with the development of transfusion-related acute lung injury: a retrospective study. Transfusion 1997; 37:719-26.
- 5) http://www.albertadoctors.org/resources/cpg/summaries/blood_transfusion.pdf