Blood transfusion during liver cancer surgery linked with higher risk of cancer recurrence and death

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Receiving a blood transfusion during curative surgery for the most common type of liver cancer (hepatocellular carcinoma) is associated with a much higher risk of cancer recurrence and dying prematurely, according to new research being presented at this year's Euroanaesthesia congress (the annual meeting of the European Society of Anaesthesiology) in Vienna, Austria (1-3 June).

The risk was markedly increased even when only a small amount of blood was transfused, researchers say. Findings showed that transfusion of 1 to 4 units of blood increased the risk of cancer recurrence by 23% and death by 55% compared to matched controls.

"Our findings from a large cohort highlighted a significant association between red blood cell transfusions and the risk of cancer recurrence as well as a dose-response relationship between the amount of transfusions and death after curative surgery for liver cancer", says Dr. Ying-Hsuan Tai from Taipei Medical University Shuang Ho Hospital in Taiwan who led the research.

"The reason why blood transfusions substantially worsen cancer prognosis remains unclear, but it is likely to be related to the suppressive effects on the immune system."

Hepatocellular carcinoma (HCC) is the fifth most common form of

cancer worldwide and the third most common cause of cancer-related deaths. It occurs frequently in people with cirrhosis (scarring of the liver) due to previous damage from hepatitis B or C virus, or long-term alcohol abuse.

Surgery to remove the cancer and a margin of healthy tissue that surrounds it (resection) is a curative treatment for people with early-stage liver cancers who have normal liver function. Whilst advances in liver surgery have reduced operative blood loss considerably, liver resection still carries the risk of excessive blood loss and need for blood transfusion.

The extent to which blood transfusion worsens cancer outcomes after surgery is poorly understood. For several decades, research has reported conflicting findings, and has been unable to conclude whether blood transfusion itself is causing problems, or if other factors such as the underlying medical conditions that make surgery necessary might be to blame.

In this study, Tai and colleagues investigated the effect of perioperative blood transfusion on cancer prognosis following HCC resection in 1,469 patients without lymph node involvement or metastasis undergoing surgery at Taipei Veterans General Hospital, Taipei, Taiwan between 2005 and 2016. Researchers assessed postoperative disease-free survival and overall survival up to September 2018. Using statistical modelling (a technique called inverse probability of treatment weighting) they were able to match patients who had equivalent age and health conditions when comparing their outcomes.

Almost 1 in 3 patients (30%; 447 patients) received 1 to 4 units of allogeneic (from another individual) blood during or within 7 days of surgery, whilst more than 1 in 10 (12%; 179 patients) were given more than 4 units.

During a median 45 month follow-up, analyses showed that cancer was 23% more likely to recur in patients who received a transfusion (1-4 units) compared to those not given a transfusion, whilst those who received more than 4 units faced a 18% greater risk of recurrence compared with those who received none.

Compared to those not given a transfusion, patients given 1-4 units of blood were 55% more likely to die from any cause, whilst those receiving 4 or more units had almost double the risk of death.

The authors conclude: "These data highlight the need for randomised trials to evaluate the influence of transfusion on cancer outcome and identify the level of anaemia that patients undergoing liver cancer surgery can withstand (or the minimum amount of blood they need to have transfused) with minimal adverse effects in order to guide practice. Until these trials have been completed, surgeons should use practices that reduce the risk of bleeding and the need for transfusion."

Provided by European Society of Anaesthesiology

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