

# Impact of Perioperative Blood Transfusion on Survival Among Women With Breast Cancer: Potential Benefits of Blood-Saving Agent Desmopressin Use During Surgery

## To the Editor:

Surgical excision is the mainstay of treatment for patients with breast cancer. Despite being the first step toward long-term control of the disease, it is increasingly recognized that surgery and several perisurgical factors can negatively influence patient outcome. In this regard, recent evidence suggests a direct link between perioperative blood transfusions (PBT) and poorer prognosis in liver, esophageal, and colorectal cancer patients.<sup>1</sup> However, PBT impact on survival of women with breast cancer has not been clearly established.

In a previous issue of the *American Journal of Therapeutics*, Nadeem et al<sup>2</sup> conducted a large meta-analysis linking PBT during breast cancer resection and negative patient outcome. Besides emphasizing the detrimental impact on overall survival, the study highlights the need to manage perioperative care from various aspects to minimize the use of PBT.

Such remarks are in line with our previous research involving the use of desmopressin (DDAVP) as adjunctive therapy during breast cancer surgery.<sup>3</sup> DDAVP is a blood-saving agent with more than 40 years of extensive clinical use in patients undergoing operations characterized by large blood loss and transfusion requirements. With proven hemostatic and antimetastatic properties, DDAVP acts as a selective agonist of vasopressin type 2 receptors (AVPR2) present in endothelium and cancer cells.<sup>3</sup> Activation of endothelial AVPR2 causes an abrupt release of von Willebrand factor from systemic microvasculature. This blood glycoprotein is involved in hemostasis, cancer cell apoptosis, and metastatic resistance. In preclinical animal studies, administration of DDAVP produced angiostatic and antimetastatic effects in experimental perioperative settings.<sup>3,4</sup> A recent phase II dose-escalation trial in patients with breast cancer (NCT01606072) explored the potential utility of perioperative administration of DDAVP.<sup>5</sup>

Interestingly, treatment was associated with reduced intraoperative bleeding, a raise in von Willebrand factor plasma levels and rapid postoperative drop in circulating tumor cells. In addition, a phase II clinical trial evaluating the potential benefits of DDAVP in patients with colorectal cancer and rectal bleeding (NCT01623206) is currently ongoing.

In summary, perioperative use of DDAVP could provide multiple therapeutic benefits aiding surgical management of breast cancer by improving hemostasis, minimizing surgery-associated risks including the need of PBT, and protecting the patient from local recurrence and metastatic disease.

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J. Garona is recipient of a postdoctoral fellowship from CONICET (Argentina). N. Sobol is recipient of an undergraduate fellowship from the Scientific Research Commission (CIC, Argentina). This work was supported by the grants UNQ 53/1029, PICT 1772/13, and INC 16-18 to D. F. Alonso.

D. F. Alonso and J. Garona serve as consultants/advisors to Elea and Chemo-Romikin. The remaining author has no conflict of interest to declare.

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