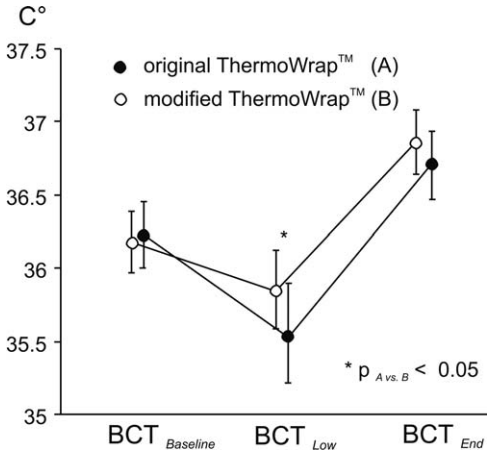

Figure 1. Intraoperative course of body core temperature using the old and modified ThermoWraps for the Allon™ 2001 system. $BCT_{Baseline}$: Body core temperature after induction of anesthesia before surgical intervention; BCT_{Low}: lowest intraoperative body core temperature; BCT_{End}: body core temperature at the end of surgical intervention.

2001 system is used on a regular basis for all patients undergoing OPCABG at the Triemli City Hospital. The modified ThermoWraps were provided free of charge by MTRE Advanced Technologies Ltd, Israel. None of the authors is related to or has financial interests in the manufacturers of the products studied. Also, there are no consultancy agreements between any authors and the manufacturer. Moreover, no specific institutional funding was necessary because all authors are regularly employed at the institutions mentioned above.

C. K. Hofer, MD, DEAA
Institute of Anesthesiology and
Intensive Care Medicine
Triemli City Hospital
Birmensdorferstr. 497
8063 Zurich, Switzerland

Michael T. Ganter, MD, DEAA
Department of Anesthesia and
Perioperative Care
University of California San Francisco
San Francisco, Calif

Andreas Zollinger, MD
Institute of Anesthesiology and
Intensive Care Medicine
Triemli City Hospital
Zurich, Switzerland

References

1. Hofer CK, Worn M, Tavakoli R, Sander L, Maloigne M, Klaghofer R, et al. Influence of body core temperature on blood loss and transfusion requirements during off-pump coronary artery bypass grafting: a comparison of 3 warming systems. *J Thorac Cardiovasc Surg*. 2005;129:838-43.
2. Gali B, Findlay JY, Plevak DJ. Skin injury with the use of a water warming device. *Anesthesiology*. 2003;98:1509-10.
doi:10.1016/j.jtcvs.2005.11.034

Unexpected pulmonary embolism in lung transplantation: Diagnosis and prospects

To the Editor:

I read with interest the article by Oto and colleagues, wherein they study and reflect upon the role of unexpected pulmonary embolism in lung transplantation.[1] The authors have employed exploratory flush as a diagnostic tool for identification of emboli and quote it as the only diagnostic tool capable for identification of emboli in the subsegmental pulmonary vasculature.[1] The procedure is invasive and can only be undertaken after the lungs have been procured from a donor. In other words, there has already been a certain consumption of time and resources before exploratory flush is carried out to indicate whether the donor lungs are suitable for the recipient. In contrast, multirow helical computed tomography is now widely accepted as a safe, noninvasive, and accurate tool for identification of emboli to the subsegmental pulmonary vasculature.[2] The procedure can identify donors before they are selected for prospective donation of their lungs and thus save considerable amount of time and resources. This is of particular relevance, considering that exploratory flush showed no therapeutic benefit and was only indicated as a diagnostic tool.[1]

The authors propose that donors with risk factors for unexpected pulmonary embolism should be demarcated as marginal donors.[1] However, trials have established that liberalization of donor criteria (with incorporation of donors having risk factors including those mentioned in this report) has no adverse outcomes of significance and leads merely to expansion of the donor pool and overcoming of shortage of donor lungs.[3-5]

Omer Ashraf, MBBS
Aga Khan University, Punjab, Pakistan

References

1. Oto T, Rabinov M, Griffiths AP, Whitford H, Levvey BJ, Esmore DS, et al. Unexpected donor pulmonary embolism affects early outcomes after lung transplantation: a major mechanism of primary graft failure? *J Thorac Cardiovasc Surg*. 2005;130:1446.
2. Patel S, Kazerooni EA. Helical CT for the evaluation of acute pulmonary embolism. *AJR Am J Roentgenol*. 2005; 85:135-49.
3. Bhorade SM, Vigneswaran W, McCabe MA, Garrity ER. Liberalization of donor criteria may expand the donor pool without adverse consequence in lung transplantation. *J Heart Lung Transplant*. 2000;19:1199-204.
4. Lardinois D, Banysch M, Korom S, Hillinger S, Rousson V, Boehler A, et al. Extended donor lungs: eleven years experience in a consecutive series. *Eur J Cardiothorac Surg*. 2005;27:762-7.
5. Sundaresan S, Semenkovich J, Ochoa L, Richardson G, Trulock EP, Cooper JD, et al. Successful outcome of lung transplantation is not compromised by the use of marginal donor lungs. *J Thorac Cardiovasc Surg*. 1995; 109:1075-9; discussion 1079-80.
doi:10.1016/j.jtcvs.2005.12.018

Reply to the Editor:

Thank you for the invitation to respond to Dr Ashraf's letter to the editor. The aims of our study were to describe the incidence of

unexpected pulmonary embolism (PE) in donor lungs that were accepted for transplantation, to investigate the effect of unexpected PE on early posttransplant outcomes, and to investigate the risk factors for unexpected PE.[1]

Ashraf states that the multidetector row helical computed tomography (MDCT) rather than the exploratory flush should be used to detect PE in donor lungs. In the past several years, computed tomography (CT) technology has evolved, and MDCT specificity to detect PE in small pulmonary arteries has improved.[2] However, MDCT is not available in many donor hospitals, and the sensitivity and specificity of CT pulmonary angiography, a possible alternative to MDCT, varies between 53% and 100%, and 78% and 100%, respectively.[2] In reality, application of routine use of CT examination, including MDCT, for brain-dead donor evaluation remains too complicated due to logistical and cost issues. In contrast, an exploratory flush to detect PE is simple, safe, and cost-effective.[1]

Donors with risk factors of unexpected PE, including donor death due to trauma with fracture and a smoking history of more than 20 pack-years, could be considered as marginal (extended) donors because a significantly higher incidence of primary graft dysfunction is seen in the recipient after transplant.[1,3] To distinguish a patient group likely to manifest primary graft dysfunction allows for consideration of further therapeutic strategies (ie, nitric oxide, surfactant therapy, etc). However, for the donors who have risk factors of unexpected PE, the combined use of MDCT with exploratory flush may be useful to increase the accuracy of detection of unexpected PE.

Takahiro Oto, MD
Gregory I. Snell, FRACP
Heart and Lung Transplant Unit
The Alfred Hospital, Monash University
Melbourne, Australia

References

1. Oto T, Rabinov M, Griffiths AP, Whitford H, Levvey BJ, Esmore DS, et al. Unexpected donor pulmonary embolism affects early outcomes after lung transplantation: a major mechanism of primary graft failure? *J Thorac Cardiovasc Surg.* 2005;130:1446-52.
2. Patel S, Kazerooni EA. Helical CT for the evaluation of acute pulmonary embolism. *AJR Am J Roentgenol.* 2005;185:135-49.
3. Oto T, Griffiths AP, Levvey B, Pilcher DV, Whitford H, Kotsimbos TC, et al. A donor history of smoking affects early but not late outcome from lung transplantation. *Transplantation.* 2004;78:599-606.

doi:10.1016/j.jtcvs.2005.12.017