We thank Dr Cusumano et al. [1] for their interest and comments on our article [2]. Their main concern is that we have not discussed or referred to extended rehabilitation for patients after thoracic surgery.

Whilst of interest and importance, extended rehabilitation was not specifically evaluated in our study. Our aim was to investigate whether routine prophylactic targeted respiratory physiotherapy after elective pulmonary resection via open thoracotomy decreased the incidence of postoperative pulmonary complications and reduced hospital length of stay. Our decision to investigate this aspect of care was based on the results of a survey we undertook of senior physiotherapists working in Australian/New Zealand thoracic units [3]. A total of 98% of survey respondents indicated that all patients were seen by physiotherapists in the period of hospitalisation after thoracic surgery, whereas only 9% provided rehabilitation for all patients following hospital discharge, and this was primarily reserved for patients undergoing lung volume reduction surgery (LVRS) or transplantation. As there had been no randomised controlled trials evaluating the effectiveness of physiotherapy during the early period of hospitalisation following thoracic surgery, we chose this as the main focus of our research. Because of the results of the survey [3], our intervention also included a progressive physiotherapy exercise programme specifically aimed at improving shoulder/thoracic cage mobility. We intend to publish the results of this aspect of the study in the future.

As Dr Cusumano et al. state [1], there is recent evidence evaluating the feasibility/effectiveness of rehabilitation programmes for post-surgical patients with non small cell lung cancer (NSCLC). However, to date and at the time of implementing our trial, the reported trials consisted of observational studies, many with small sample sizes [4,5]. We believe the provision of a comprehensive programme, including postoperative rehabilitation, requires further supportive data before widespread implementation. Nevertheless, we concur that rehabilitation for patients who have undergone thoracic surgery may be an important aspect in the continuum of care, and certainly warrants further investigation in randomised controlled trials. Additional studies could be undertaken to evaluate whether such programmes are more effective if commenced during the period of hospitalisation after surgery, or can be delayed to later in the post-discharge period with equal effect. Until such research is undertaken, it will not be possible to conclusively comment on the possible synergy between early physiotherapy intervention and postoperative rehabilitation that extends into the post-discharge period.

Dr Cusumano et al. [1] also ask whether we recommend modification of the early postoperative physiotherapy approach. As noted in our article, our results suggest the need for re-evaluation of early postoperative respiratory physiotherapy for patients undergoing elective pulmonary resection via open thoracotomy — but only if the usual practice of the thoracic unit includes a standardised clinical pathway incorporating early mobilisation and if the post-operative pulmonary complication rate is as low as we found. We also noted that our results should be not be extrapolated to patients undergoing other types of thoracic surgery, and should be extrapolated with caution to patients undergoing pulmonary resection with preoperative risk factors, including chronic obstructive pulmonary disease (COPD) or reduced forced expiratory volume in 1 second (FEV1).

References


Letter to the Editor

Anti-inflammatory response and cardiopulmonary bypass

Yves Denizot a,*, Nathalie Nathan b

a UMR CNRS 6101, 2 rue Dr. Marcland, Faculte de Me´decine, 87025 Limoges, France
b Service d’Anesthesie Re´animation Chirurgicale, CHU Dupuytren, 87042 Limoges, France

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We read with a great interest the excellent article by Onorati and co-workers demonstrating that pulsatile cardiopulmonary bypass (PCPB) and off-pump coronary artery bypass (OPCAB) surgery markedly reduced endothelial activation and inflammatory response as compared with linear CPB [1]. What about anti-inflammatory cytokines (except interleukin (IL)-10 already investigated in this study)? Studies have demonstrated that both inflammatory/anti-inflammatory cytokines and growth factors/anti-growth factors are released during conventional CPB [2—5]. Anti-inflammatory cytokines and anti-growth factors (sFlt-1) are considered as an anti-inflammatory response against CPB-induced inflammatory changes. The authors might use their collected blood samples to search for IL-4, IL-13, soluble IL-6 receptor and soluble vascular endothelial growth factor (VEGF) receptor (sFlt-1) and to identify whether the anti-inflammatory response is also impaired during PCPB and OPCAB as compared with linear CPB.

References


Reply to the Letter to the Editor

Anti-inflammatory response and cardiopulmonary bypass: reply to Denizot and Nathan

Francesco Onorati a,*, Santo Caroleo b

a Cardiac Surgery Unit, Magna Graecia University of Catanzaro, Catanzaro, Italy
b Anesthesiology Unit, Magna Graecia University of Catanzaro, Catanzaro, Italy

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We thank doctors Denizot and Nathan for their appreciation and comments about our article investigating endothelial activation and inflammatory response after different types of perfusion [1].

There is compelling evidence that off-pump surgery is associated with reduced circulating levels of inflammatory mediators, some of which, such as interleukin (IL)-6, are still expected to occur as consequences of the surgical trauma, whereas others, such as IL-8 (with a key-role in neutrophil trafficking and myocardial injury), are related to cardiopulmonary bypass (CPB)-induced ischaemia—reperfusion injury [2]. With the advances of scientific research, a progressive increase of pro-inflammatory/anti-inflammatory markers and growth/anti-growth factors are daily discovered and tested in the clinical practice. However, the cost/benefit ratio on the advancement of knowledge must always be kept in mind. We have already investigated the endothelial/cytokine response to CPB with different laboratory assays available at our Institution, and found IL-6, IL-8, IL-10, MCP-1 and vascular endothelial growth factor (VEGF) to dramatically change during cardiac operations [2]. Therefore, we decided to transpose this set of biochemical assays also to off-pump surgery.

On the other hand, the interest of the scientific community to circulating biomarkers and triggers of the systemic inflammatory response dates back to decades [3]. A vast amount of literature data have been stored during these years, all demonstrating a significant burst of pro-inflammatory activation with a parallel activation of different anti-inflammatory pathways. Of the vast amount of anti-inflammatory markers activated during a cardiac operation, Misoph and Babin-Ebell [3] demonstrated that the degree of the observed modulation of cytokine patterns during and after CPB was patient-dependent, since large inter-individual variations...