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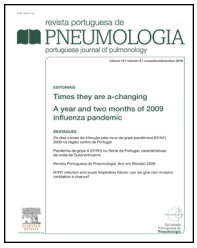

EDITORIAL

Lung transplantation in Portugal

Lung transplantation was pioneered more than 50 years ago by James Hardy and introduced into clinical practice in 1986, by Joel Cooper and soon after, by Alexander Patterson. Since then, and through constant improvements, lung transplantation was offered to over 30 000 patients worldwide, establishing itself as the standard therapy for end-stage pulmonary disease. Lung transplantation has allowed patients with chronic and terminal respiratory failure, a significant improvement in their quality of life and prolonged survival. Patients that are candidates to receive a new lung, normally have a life expectancy that is inferior to 18 months, and the mean survival after single or double lung transplantation is, at the present, well over 60% at 3 years.[1]

Lung transplantation is, without question, a very complex surgical intervention. Not only due to operative technical challenges, but also due to the fact that chronic respiratory failure produces a dramatic impact on global physical condition of the transplant candidates, inducing an extreme frailty, and putting them at the highest surgical risk. This is the reason why great care must be given on the selection of candidates, in order to minimize peri-operative risk.

But not only surgery is demanding – pre operative selection and optimization – be it for the nutrition status, the physiotherapy, the sterilization of infections and the general care, at large, that must all be pondered. Post-operative care is, equally, challenging, as these patients combine the need for respiratory optimization, cardiac support, renal function tuning, and the most strict fluid balance. Immediate post-operative results do translate this need for expertise, compensating well for complexity, with an early mortality that stays, for us, well below 10%.

Ischaemic and reperfusion lesions, early after transplantation, and infection versus rejection, latter, will threaten every post-operative period, requiring constant surveillance, requesting expertise and imposing frequent adjustments. Later on, chronic rejection, leading to silent obliterating bronchiolitis, will compromise functional capacity and ultimately affect late survival, this in conjunction with the risk for neoplasms, as for any chronically immune-depressed patients.

Lung transplantation needs a multidisciplinary team that constantly interacts – that is to say, needs a true interdisciplinary team, comprising surgeons – thoracic and cardiac, pulmonologists, bronchology interventionists anaesthesiologists, infectious diseases specialists, nutrition and psychology specialists, perfusion technicians, nurses, physiotherapists, image specialists and all other supporting staff. Different from other surgical endeavours, lung transplantation is, by no means, a one man's show, it is imperative team work! This team requires volume, and volume imposes the minimum of 15–20 cases, yearly to provide enough expertise.

Lung transplantation depends on suitable candidates, operated within what is called the optimal ''transplantation window'', but also depends on suitable donors, as it is well known that the lungs are, possibly, the most sensitive organs to preserve and keep in good conditions prior to transplant. From all identified donors, not more than 20%, at the very best, will be suitable for lung donation. Several strategies to increase the donor pool are being introduced – expanding criteria, optimizing donor's general conditions and, more recently, ex vivo perfusion preservation, non-beating heart donors and lobar donation, are all being considered. We have practiced all, but the last two, and the ex vivo perfusion is being developed for introduction into our practice in a very near future. One thing is clear to all transplant specialists – there is no good lung transplantation without optimized donation, this being one area that needs further focusing, if the numbers and quality of transplantation are to be increased.

There is one single centre performing lung transplantation in Portugal, our centre. This allows for experience concentration, though being negatively considered by some for being an ''orphan centre''. For the first time this year, and even more importantly than having celebrated the lung transplant number 100, we will reach the magic mark of 20 lung transplants yearly, not far from our estimated national needs. However, this number is arguable, as there is also a great discrepancy for lung transplantation figures in Europe, from 0.2 per million to 6 per million...

At the moment, 30 patients are on our waiting lung transplantation list and, for them, the mean time on the list is, presently, 250 days. Our donor acceptance rate is 18%, a figure that is similar to other international centres, but that hopefully will improve with the introduction of the ex vivo preservation techniques. Having said that the yearly needs

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in Portugal may well be slightly over 20 cases, we are convinced that, more offer would create more need, however, one limitation would be the size of the pool of donors in Portugal, that is already being utilized in full extent by our lung programme.

So far, 106 lung transplantations were performed at our centre, this representing an acceptance rate of 24% and a refusal rate of 57%, these due mainly to the presence of formal transplantation contra-indications.

From those transplanted, 45% were double lungs, mainly for infected lung diseases, as cystic fibrosis or bronchiectasis, or for concomitant pulmonary hypertension. The majority of transplants (53%) were performed due to parenchymal disorders, as lung fibrosis. The other diagnosis for lung transplantation was COPD in 22%, Cystic Fibrosis (CF) in 16% and non-CF bronchiectasis in the remaining 9%.

Outcomes are remarkedly good, once the learning curve was overcome, showing now great stability of results: At this moment in time, 64% of all patients that underwent a lung transplant at our centre are still alive, with a median survival of 55.5 months, the longest survival in the series reaching 12 years.

Lung transplantation survival curves (Kaplan–Meier) show a 3-month survival of 83.5% (95% CI 75–90), a 12 months survival of 71.3% (95% CI 61–80) and same values at 24, 36 and 60 months are, respectively, 67% (95% CI 56–76); 56.8% (95% CI 44–68) and 48.5% (95% CI 33–62). These figures compare, if I may say, even favourably with those regularly published by the voluntary registry of the International Society of Heart & Lung Transplantation.[2]

Lung transplantation is an expensive activity, providing good, though very expensive returns. The direct cost for any transplanted patient is, for us, 79 316.07 € with the price of one QALY levelling at approximately three times the normal accepted for other considered as cost-effective medical interventions.[3] However, the very favourable impacts on the quality of life of many of those patients, among whom, I might recall the youngsters with cystic fibrosis, a cohort for which our transplantation mortality nearly approaches zero, makes the team value their daily demanding work, at the service of our national centre, and say, like Einstein – *''not everything that can be measured counts and not everything that counts can be measured''*.

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