

Assessment of a donor lung viability

Katsunobu KAWAHARA, Masao TOMITA, Hiroyoshi AYABE,
Ryuuichiro YOSHIDA, Kouji AZUMA, Hiroshi ISHIKAWA,
Shimei OH, Takaaki KAWABUCHI, Tetsuya SATO,
Ryuuichiro SHIBATA, Haruhiko NAKAO, Enjyu SHIRAISHI,
Satoru HASHIMOTO, Shinsuke HARA, Taizou FURUKAWA

1st Department of surgery

Nagasaki University School of Medicine

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The viability of a donor lung preserved by cooling for 4 hours was assessed by the degree of the derangement of the pulmonary vessel on the pulmonary angiogram prior to lung transplantation in comparison with survival after transplantation. The finding of periarterial leak on the pulmonary angiogram is most indicative for the poor viability of a donor lung.

In conclusion, the pulmonary angiogram prior to transplantation is of use to assess the viability of a donor lung.

INTRODUCTION

It is necessary to establish the adequate immunosuppressive procedures after lung transplantation as well as the way to gain the donor lung at any times when lung transplantation is clinically needed.

It also is well known that surgical technique to transplant the lung is not a major problem confronting surgeons because of well refinement of a surgical technique.

The function of the transplanted lung has been ensured experimentally and clinically in spite of interruption of the bronchial blood flow and the lymph flow.

The available lung storage methods have also been sought with regard to prolonga-

川原 克信, 富田 正雄, 綾部 公懿, 吉田隆一郎, 吾妻 康次, 石川 啓, 王 志明
川渕 孝明, 佐藤 哲也, 柴田隆一郎, 中尾 治彦, 白石 円樹, 橋本 哲, 原 信介
古川 泰蔵

tion of the acceptable time period by using the various methods of cooling, perfusion and freezing. In contrast, it is necessary to judge the viability of a donor lung prior to transplantation in order to extend the clinical application. The purpose of this study is to seek for the adequate method to assess the viability of a donor lung prior to transplantation.

RESULT

The findings of the pulmonary angiography were shown in Fig. 1. and 2., which were in accordance with the arterial and venous phases respectively.

The pulmonary angiographic findings were analysed based on the main findings of the peripheral vessel patterns as compared to survival after transplantation with no use of the immunosuppressive drugs.

Table 1. showed a correlation of survival with the angiographic patterns. Early death not infrequently occurred in case with the angiographic findings of the distal interruption with distension in proximity on the pulmonary arteriogram.

The finding of clear visualization with defined contours of the vessel walls in the distal pulmonary artery and vein on the angiogram correlated well with the survival.

This result of this study indicated that clear visualization of the distal artery and vein on the pulmonary angiogram of a donor lung is most contributing finding not only to

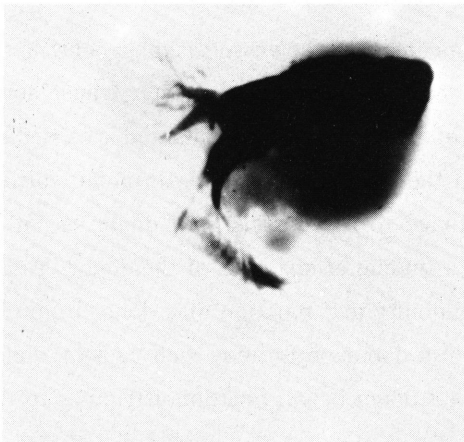


Fig. 1. Pulmonary angiogram in arterial phase of a donor lung prior to transplantation after a 4 hour storage by cooling

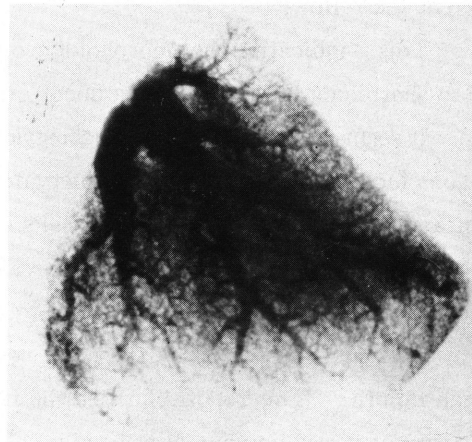


Fig. 2. Pulmonary angiogram in venous phase of a donor lung prior to transplantation after a 4 hour storage by cooling

Table 1. Survival after lung transplantation according to pulmonary angiographic finding performed prior to transplantation of a donor lung of a 4 hour storage by cooling

angiographic findings	Survival		
	24hrs	3days	3days
arterial phase			
Clear with defined contour			5
unclear without defined contour	2	3	1
interruption with proximal distension	3		
perivascular leak			
venous phase			
Clear with defined contour		1	4
unclear without defined contour	3	1	
interruption with proximal distension	4		
perivascular leak	1		

elongate the survival but to predict a well-functioning donor lung after transplantation.

DISCUSSION

Much has been said that the endothelial cells of the donor organ vessel has become bulky in ischemia during a storage, which is leading to the stricture of the vessels and prevent the reflow.¹⁾²⁾

This is indicating that morphologic rearrangement of the vessels is most contributable to shortening the survival of a donor organ and to its poor function after transplantation. It seems reasonable that vasoconstriction of a donor organ transplanted is caused by various factors such as reflectory innervation of the sympathetic nerve, thrombus formation and damage to the endothelial cells. Damage to the vessels of a donor organ in ischemia is widely investigated. As is evident, a finding of stricture of the donor vessels after transplantation is most referable to the viability and function of a donor organ.³⁾⁴⁾

Over 50% narrowing of the main vessel in a donor organ may well cause a donor organ failure.⁵⁾ This report clarified the fact that donor organ function attributes to the integrity of vessel damage in ischemia.

As an indicator to judge the degree of viability of a donor organ, angiographic findings of the small vessels in periphery is of value.

In the present study, it is our conviction that pulmonary angiography of a donor lung

prior to transplantation is most useful means to assess its viability as well as to predict its function after transplantation.

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