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Stem cell therapy may help recondition lungs previously rejected for transplant

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Nearly 1,650 people in the U.S. are awaiting lung transplants. Unfortunately, both domestically and abroad, the demand for donor lungs far outpaces the supply. The limited availability of donor lungs can lead to long delays before transplant, leaving patients to face a mortality rate of up to 40 percent while they wait.

Most potentially transplantable lungs are rejected by surgical teams because of injury or dysfunction, such as pulmonary edema (fluid build-up in the lungs). In addition to rendering lungs unusable for transplant, pulmonary edema also signals that the lungs are not functioning properly post-transplant and is a major cause of illness and death among lung transplant recipients. Lungs that can clear fluid better are associated with better outcomes among recipients after transplantation.

In this study, Danny F. McAuley, Gerard F. Curley, Umar I. Hamid, John G. Laffey, Jason Abbott, David H. McKenna, Xiaohui Fang, Michael A. Matthay, and Jae W. Lee looked at whether lungs that were rejected for transplantation because of edema could be "reconditioned" to qualify for transplant. They studied donor lungs that had been rejected for transplantation by the Northern California Transplant Donor Network and that were cleared for research use by the donors' families.

Roughly 50 percent of these rejected lungs had a decreased capacity to reabsorb lung fluid. The research team found that administering human mesenchymal stem (stromal) cells (MSCs) intravenously restored the ability of the lung to remove alveolar edema fluid more normally. The

research highlights the potential for MSC administration as a therapy for resolving pulmonary edema and improving donor lungs before transplantation. The study has implications for increasing the supply of usable donor lungs available for transplant.

More information: The article, "Clinical grade allogeneic human mesenchymal stem cells restore alveolar fluid clearance in human lungs rejected for transplantation," is available online: ajplung.physiology.org/content/306/9/L809

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