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[Intervention Review]

Immunosuppressive drug therapy for preventing rejection following lung transplantation in cystic fibrosis

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ABSTRACT

Background

For people with cystic fibrosis and advanced pulmonary damage, lung transplantation is an available and viable option. However, graft rejection is an important potential consequence after lung transplantation. Immunosuppressive therapy is needed to prevent episodes of graft rejection and thus subsequently reduce morbidity and mortality in this population. There are a number of classes of immunosuppressive drugs which act on different components of the immune system. There is considerable variability in the use of immunosuppressive agents after lung transplantation in cystic fibrosis. While much of the research in immunosuppressive drug therapy has focused on the general population of lung transplant recipients, little is known about the comparative effectiveness and safety of these agents in people with cystic fibrosis. This is the final update of a previously published review; no longer being updated due to a lack of research in the area.

Objectives

To assess the effects of individual drugs or combinations of drugs compared to placebo or other individual drugs or combinations of drugs in preventing rejection following lung transplantation in people with cystic fibrosis.

Search methods

We searched the Cochrane Cystic Fibrosis and Genetic Disorders Group Trials Register and scanned references of the potentially eligible study. We also searched the www.clinicaltrials.gov registry and the World Health Organisation (WHO) International Clinical Trials Registry Platform (ICTRP) to obtain information on unpublished and ongoing studies.

Date of latest search: 29 May 2018.

Selection criteria

Randomised and quasi-randomised studies.

Data collection and analysis

We independently assessed the studies identified from our searches for inclusion in the review. If we had found eligible studies to include in the review, we planned to independently extract data and assess the risk of bias. We planned to use GRADE to summarize our results through a summary of findings table for each comparison we could present in the review.



Main results

While five studies addressed the interventions of interest, we did not include them in the review because the investigators of the studies did not report any information specific to people with cystic fibrosis. Our attempts to obtain this information have not yet been successful.

Authors' conclusions

The lack of currently available evidence makes it impossible to draw conclusions about the comparative efficacy and safety of the various immunosuppressive drugs among people with cystic fibrosis after lung transplantation. A 2013 Cochrane Review comparing tacrolimus with cyclosporine in all lung transplant recipients (not restricted to those with cystic fibrosis) reported no significant difference in mortality and risk of acute rejection. However, tacrolimus use was associated with lower risk of broncholitis obliterans syndrome and arterial hypertension and higher risk of diabetes mellitus. It should be noted that this wider review contained only a small number of included studies (n = 3) with a high risk of bias. Additional randomised studies are required to provide evidence for the benefit and safety of the use of immunosuppressive therapy among people with cystic fibrosis after lung transplantation.

PLAIN LANGUAGE SUMMARY

Drugs to suppress the immune system after lung transplantation in people with cystic fibrosis

Review question

We reviewed evidence to find out the effects of individual drugs or combinations of drugs when they are given to prevent donor lungs being rejected following transplantation in people with cystic fibrosis. We only considered randomised studies (where it is decided at random which drug volunteers are given) comparing individual drugs or combinations of drugs to a placebo (dummy treatment with no active medicine) or to each other.

Background

Lung transplantation is an available and realistic treatment option for people with cystic fibrosis whose lungs are severely damaged. However, as a natural defence mechanism, the body recognises a transplanted lung as foreign and activates the immune system to reject it. This is known as graft rejection. To prevent this, drugs are needed to suppress the immune system after lung transplantation. There are several different types of such drugs that act by suppressing different components of the immune system. Much of the research on such drugs has focused on all people who have had a lung transplant and not specifically on those with cystic fibrosis. Currently, clinicians do not all agree on a common way of using anti-rejection drugs in people with cystic fibrosis after they have received a lung transplant.

Search date

The evidence is current to: 29 May 2018.

Study characteristics

Although we found five studies which looked at anti-rejection drugs, they included people with a number of chronic conditions and not just cystic fibrosis.

Key results

The studies we found reported results from all volunteers combined and we were not able to isolate the results that were specific to people with cystic fibrosis. We contacted the researchers who conducted these studies, but they have not sent us the specific results we need.

There is a review of drugs to suppress the immune systems of people who have had lung transplants (not restricted to those with cystic fibrosis) and this only included three studies which the review authors judged to have a high risk of bias. The review did not find that any one drug was better than another for reducing the chances of death or acute rejection; but one drug (tacrolimus) led to a lower risk of long-term rejection and high blood pressure, although there was a higher risk of diabetes.

Research is needed on the use of drugs that suppress the immune system in people with cystic fibrosis who have received a lung transplant. Due to the lack of research in this area, we do not plan to update this review again.