Allogenic fetal retinal pigment epithelial cell transplant in a patient with geographic atrophy.

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Abstract

PURPOSE
To test the hypothesis that healthy fetal retinal pigment epithelium (RPE) can rescue the remaining viable RPE and choriocapillaries and thereby the photoreceptors in non-neovascular age-related macular degeneration (ARMD) (geographic atrophy [GA]).

METHODS
A 65-year-old legally blind woman with non-neovascular ARMD underwent fetal RPE transplantation. Best-corrected visual acuity testing, detailed fundus examination, fundus photography, fluorescein angiography, scanning laser ophthalmoscope macular perimetry, and humoral and cellular immune response testing were performed. A suspension of RPE was infused into the subretinal space through a retinotomy along the superotemporal arcade at the edge of the area of GA. The patient did not take systemic immunosuppressants.

RESULTS
The patient's vision remained unchanged for 5 months after the surgery. Fluorescein angiography after transplantation showed leakage and staining at the level of the outer retina. There was progressive subretinal fibrosis in the area of the transplant. Immune response studies showed a weakly positive mixed lymphocyte response against phosducin and rhodopsin.
CONCLUSION
Although it is surgically feasible to transplant fetal RPE to the subretinal space of patients with GA, such an allogenic RPE transplant without immunosuppression leads to leakage on fluorescein angiography and eventual fibrosis. A very weak immune response against proteins associated with photoreceptors is also of concern.

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