primary studies - published, non RCT

Modification of nasal epithelial potential differences of individuals with cystic fibrosis consequent to local administration of a normal CFTR cDNA adenovirus gene transfer vector.

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Participants

9 individuals with CF. Each individual served as their own control with measurements made in the nostril to be treated before AdCFTR administration, and in the contralateral untreated nostril.

Interventions

received 2 x 10(5) to 2 x 10(8.5) plaque forming units of a replication-deficient, recombinant adenovirus vector containing a normal copy of the CFTR cDNA (AdCFTR) to the epithelium of one nostril.

Outcome measures

Measurements made included: baseline electrical potential difference (PD) between the surface of the nasal epithelium and the interstitial fluid, change in PD in response to amiloride, which inhibits apical Na+ channels, and change in PD in response to isoproterenol in a low Cl- solution, a measure of cAMP-regulated Cl- conductance. The functional integrity of the epithelium was evaluated by the PD response to ATP.

Main results

On the average, in the treated nostril over 2 weeks after the local administration of the adenovirus vector compared to measurements made in the same nostril before treatment, baseline PD decreased toward normal (-53.3 +/- 4.0 to -34.6 +/- 3.4, p = 0.01), response to amiloride decreased toward normal (36.9 +/- 4.7 to 19.7 +/- 3.0, p = 0.02), and response to low Cl- and isoproterenol increased toward normal (-4.5 +/- 1.5 to -9.1 +/- 2.1, p = 0.05). There were no changes in response to ATP (-15.3 +/- 2.7 to -15.8 +/- 1.9, p = 0.39), suggesting that the epithelium remained functionally intact. Importantly, there were no significant changes in measurements made in the untreated nostril.

Authors' conclusions

While limited to the nasal epithelium, these data suggest that an adenovirus vector can safely deliver sufficient CFTR cDNA function to improve the abnormal CF bioelectric phenotype.

http://www.mrw.interscience.wiley.com/cochrane/clcentral/articles/600/CN-00122600/frame.html

See also

Human gene therapy YR: 1995 VL: 6 NO: 11

Keywords

Adult; Gene Transfer Techniques; Infection; Intranasal; non pharmacological intervention - genetic& reprod; pharmacological_intervention; vectors;