Differentiation of embryonic epiglottal cartilage at ectopic site

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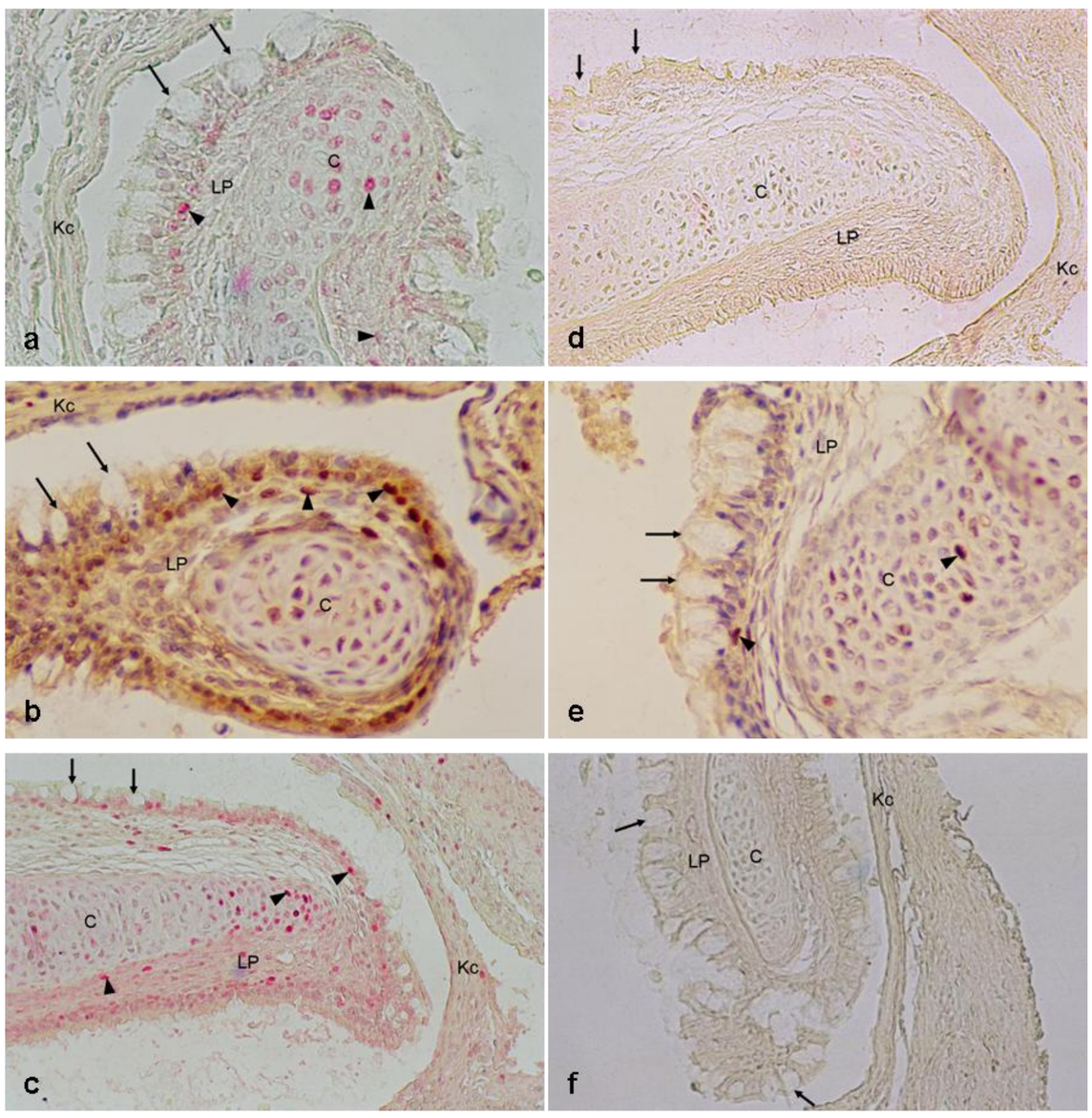
INTRODUCTION

Almost two decades ago, human epiglottis was used as an autologous composite graft in eyelid reconstruction. Therefore fetal rat epiglottis and its developmental potential in ectopic transplants under the influence of the epigenetic drug was investigated.



PCNA expression in transplants

a) PCNA expression in mucosa (epithelium and lamina propria) and cartilage of the treated transplant (arrows). C – cartilage, goblet cells in ciliated pseudostratified epithelium (arrows), LP – lamina propria, Kc – kidney capsule. Fast red, counterstained with haematoxylin, x 400. b) PCNA expression in the epithelium and cartilage of the treated transplant (arrows). C – cartilage, goblet cells in ciliated pseudostratified epithelium (arrows), LP – lamina propria Kc – kidney capsule. DAB, counterstained with haematoxylin, x 200.

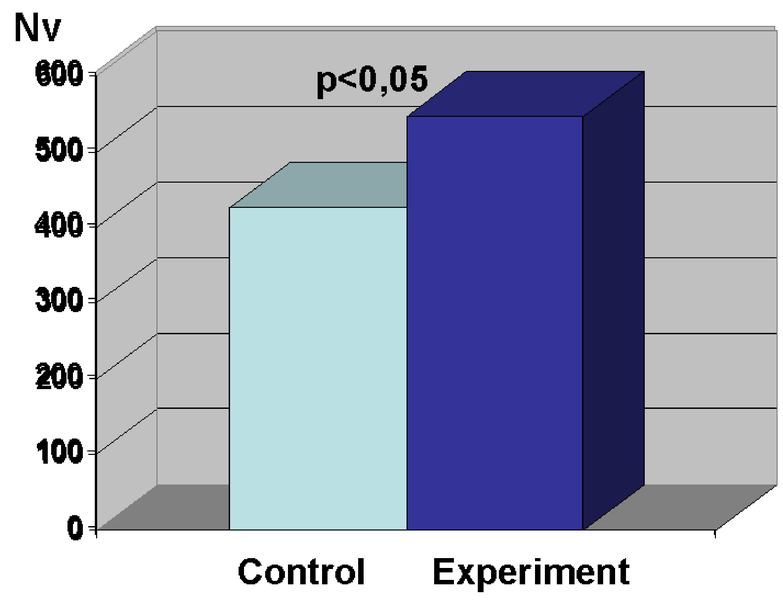
c) PCNA expression in the epithelium and cartilage of the treated transplant (arrows). C – cartilage, goblet cells in ciliated pseudostratified epithelium (arrows), LP – lamina propria, Kc – kidney capsule. Fast red, counterstained with haematoxylin, x 200. d) Negative control of Fig.3A. C– cartilage, ciliated pseudostratified epithelium with goblet cells (arrows), LP – lamina propria, Kc – kidney capsule. Fast red, counterstained with haematoxylin, x 200. e) PCNA expression in the epithelium and cartilage of the sham treated control transplant. C – cartilage, goblet cells in ciliated pseudostratified epithelium (arrows), LP – lamina propria. DAB, counterstained with haematoxylin, x 400. f) Negative control of fig .E – cartilage, goblet cells in ciliated pseudostratified epithelium (arrows), LP – lamina propria Kc – kidney capsule. DAB, counterstained with haematoxylin, x 200.

MATERIAL AND METHODS

Epiglottises from 17-days-old rat embryos were transplanted under kidney capsules of adult rats for 14 days. 5-azacytidine (5mg/kg) was injected intraperitoneally during first three days and controls were sham treated. Immunohistochemical detection and quantitative stereological analysis of the Proliferating Cell Nuclear Antigen (PCNA) expression (numerical density Nv) were performed.

RESULTS

PCNA was expressed in almost all cells of the fetal epiglottis (controle 1) while in the adult (controle 2) it was expressed in minority of cells. In transplants (controle 3), differentiation progressed towards the differentiation found in the adult. Application of 5-azacytidine increased the capacity for proliferation (Nv PCNA) in comparison to controls but no difference in differentiation was observed.



Numerical density of the PCNA positive nuclei. Note that Nv was significantly higher in 5-azacytidine treated transplants.

CONCLUSION

Data about the developmental potential and induction of proliferation in mammalian epiglottis by epigenetic modulation is of importance for regenerative medicine.