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PRESENCE OF EGF-LIKE GROWTH FACTORS AND EGF RECEPTOR IN THE RAT EXORBITAL LACRIMAL GLAND: CORNEAL REGULATION THROUGH EXOCRINE SECRETION OF GROWTH FACTORS IN TEARS AND/OR PARACRINE REGULATION OF THE LACRIMAL GLAND ?

MARECHAL H.¹ JAMMES H.² ROSSIGNOL B.¹ AND MAUDUIT P.¹

¹ Inst.Bioch., CNRS URA 1116, Univ Paris XI, Orsay (France).

² Unité d'Endocrinologie Moléculaire, INRA, Jouy en Josas (France).

Purpose: The aim of this work was to demonstrate that the exorbital rat lacrimal gland was a site of synthesis of some growth factors of the EGF family (EGF, HB-EGF, TGF α) and their receptor, namely the EGF receptor (EGFR).

Methods: Male Sprague Dawley rats were used in these experiments. RT-PCR and Northern-Blot analysis of the lacrimal gland mRNA population were performed to study the expression of both growth factors and EGFR genes.

The presence of EGF-like activities in the soluble fraction of the lacrimal gland was analysed by radio-receptor assay (RRA) using the rat liver EGFR as binding unit and mouse ¹²⁵I-EGF as radioligand.

The presence of the EGFR protein was assessed by:

1/ Immunochemical techniques: immunoprecipitation and Western-blot analysis of solubilized membrane proteins using a specific Sheep polyclonal antibody directed against the human EGFR. Its activation by EGF was measured using a specific mouse monoclonal (4G10) antibody directed against phosphotyrosine residues

2/ Radioligand binding experiments which were performed on membrane fractions using ¹²⁵I-EGF as a radioligand

Results: Results demonstrate that the mRNA population extracted from the rat lacrimal gland contains specific transcripts coding for growth factors such as EGF, TGF α and HB-EGF as well as for the EGFR. EGF-like growth factors were detected by RRA in the soluble fraction and an EGF activable EGFR found in the membrane fraction of the lacrimal gland.

Conclusion: The rat exorbital lacrimal gland is a site of synthesis and a potential site of secretion of EGF-like growth factors. These growth factors may be released in tears and act to maintain the corneal epithelium integrity and/or act in a paracrine manner through the activation of the lacrimal cells EGFR. Both of these hypothesis have now to be analysed.

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ASSESSMENT OF OCULAR REACTIONS TO DANDER IN A CAT ROOM: EFFICACY OF TOPICAL KETOROLAC AND ORAL TERFENADINE

RAIZMAN M.^{1,2} and MAROUN F.¹

¹New England Eye Center, New England Medical Center

²Tufts University School of Medicine, Boston, Mass, USA

Purpose To evaluate ocular findings upon exposure to cat dander in a controlled environment cat room and to determine the efficacy of topical ketorolac and oral terfenadine in this model.

Methods Forty patients with known cat allergies were exposed to cat dander for 90 minutes. Multiple signs and symptoms were evaluated every 30 minutes using questionnaires, slit lamp examination, and pulmonary function testing. At least one week later, patients were randomized to three days of treatment with either 1) placebo drops QID and oral placebo BID, 2) ketorolac drops QID and oral placebo BID, 3) placebo drops QID and oral terfenadine BID, 4) ketorolac drops QID and oral terfenadine BID, or ; this pre-treatment was followed by repeat exposure to cat dander. Data were analyzed by one-way ANOVA.

Results Cat-sensitive individuals consistently exhibited signs and symptoms of allergy in the cat room. Group 2 (Ketorolac drops with oral placebo) experienced a greater reduction of ocular itching than the other groups (p=0.05). Group 4 (Ketorolac drops with oral terfenadine) also showed improvement in ocular signs and symptoms, but did not achieve statistical significance because of low subject numbers. Two patients were dismissed due to excessive systemic signs or symptoms.

Conclusions The cat room is a safe, reliable, and reproducible method to challenge the eyes of cat-sensitive individuals. Ketorolac showed a beneficial effect in controlling ocular itching. Ketorolac and terfenadine also improved patients signs and symptoms. This is an effective model for studying ocular allergic responses and drug intervention.