PART I. EXPERIMENTAL KERATOCONJUNCTIVITIS SICCA

INTRODUCTION

Dry eye syndrome

Lacrimal hyposecretion may result in the pathological condition of dryness of the eyes, usually bilateral and said to be due to the lack of ‘reflex’ tear secretions from the lacrimal gland. The anterior eye may continue to receive some amount of secretions from the accessory tear glands.

The diminution of tear secretion or its complete absence can be classified as follows:

I. Primary

I. Diseases of the lacrimal gland itself may result in decreased tear secretion:
   A. Excision of the lacrimal gland or its palpebral lobe usually has no ill-effects, but subsequent xerophthalmia has been reported.
   B. Tumours of the gland in late stages.
   C. Atrophy of the gland:
      1. Senile atrophy.
      2. Idiopathic atrophy (Sjögren’s syndrome).
      3. Atrophic stages of the severe inflammatory or other diseases of the gland.

II. Diseases of the conjunctiva:
   Diseases leading to scarring of conjunctiva and obstruction of lacrimal gland ductules:
   1. Burns of conjunctiva.
   2. Ocular pemphigoid.
   3. Diphtheric conjunctivitis.

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4. Trachoma.
5. Post radiational.

2. Toxic

Some substances act directly on the secretory cells.
2. Botulism.
3. Deep anaesthesia.

3. Debilitating diseases
1. Typhus.
2. Cholera.
3. High fever.
4. Starvation.

4. Neurogenic causes

Lesions affecting the nerve supply of the lacrimal gland:
1. Lesions of the supranuclear pathway between cortical centres and the facial nucleus typically abolish psychic weeping while the reflex lacrimation is intact.
2. Lesions of the facial nerve:
   A. Lesions of the VIIth nerve above the facial ganglion i.e. presumably between the facial lacrimal nucleus and the geniculate ganglion; e.g. pontine lesions, basal fractures of skull, otitis media or zoster of the geniculate ganglion produce diminution of lacrimal secretion.
   B. Diminution or abolition of both the psychic and reflex lacrimation follows the paralytic lesions of the efferent pathway:
      1. Greater superficial petrosal nerve (in skull fractures).
      2. Sphenopalatine ganglion and its lacrimal branch (tumours of the posterior wall of antrum).
      3. Trigeminal lesions:
         Lesions of the trigeminal nerve, including extirpation of the Gasserian ganglion may abolish reflex sensory lacrimation but in addition may cause general diminution of secretion and abolition of psychic weeping on the ipsilateral side due to the interruption of the efferent pathway.
   4. Sympathetic lesions:
      These lesions produce variable results.
      5. Congenital defects:
         1. Lack of secretion in the presence (presumptive) of the lacrimal gland.
         2. Familial autonomic dysfunction (Riley-Day Syndrome).
         3. Anhydrotic type of ectodermal dysplasia.