ACCESSORY CONJUNCTIVAL FOLDS* SO-CALLED EPITARSUS

BY

H. V. NEMA, K. NATH, O. P. AHUJA, AND B. R. SHUKLA

Aligarh Muslim University Institute of Ophthalmology and Gandhi Eye Hospital, Aligarh, India

THE condition of an accessory fibro-fleshy conjunctival fold between the bulbar and palpebral conjunctiva has attracted the attention of several workers (Blasius, 1835; von Graefe, 1863; von Harlan and de Schweinitz, 1895; Schapringer, 1899; Denig, 1900; Herbert, 1901; Campbell, 1901; Oeller, 1904; Robertson, 1906; Adamück, 1907; Tyson, 1913; Shoemaker and Alt, 1914; Wibaut, 1926; Taborisky, 1928; Lloyd, 1931; Satnam Singh and Grover, 1960; Ayoub, 1963). Often the fold is triangular, with its base in the fornix and the apex, or with the narrower end either free or attached at a short distance from the margin of the lid.

The existence of multifarious names for the condition and manifold theories of its causation shows that its exact pathogenesis has not been understood. The frequent occurrence of the condition in Northern India has given us an opportunity to study the condition in detail and has enabled us to give a correct nomenclature and describe its aetiopathogenesis.

Materials and Methods

Nearly 14,000 patients who attended Gandhi Eye Hospital between September, 1962, and May, 1963, were screened and 15 cases of accessory conjunctival folds were discovered and investigated. Six more cases were found during a survey of three villages (Alipur, Hastinapur, and Mause) with a total population of 2,000. The survey was conducted as a part of the activities of the Trachoma Research Centre of Muslim University Institute of Ophthalmology. In each case a detailed history of exudative conjunctivitis, trachoma, caustic application, scraping or rolling, and trauma was taken. With the help of a probe, the folds were clinically examined in order to determine the size, shape, and anatomical attachments. In 7 cases the folds were excised and subjected to histopathology.

A summary of 21 cases showing age, sex, type of folds, probable aetiological factors, and results of cultures is given in the Table opposite.

Discussion

Nomenclature

Various names have been used in the past by different authors to describe the condition—congenital bridges and pouches (Herbert, 1901), pseudopterygium palpebrae superioris (Monphous, 1901; Werncke, 1904; Lindgreen, 1907), eye-lid

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TABLE
SHOWING AGE, SEX, AETIOLOGICAL FACTORS, AND TYPE OF ACCESSORY
CONJUNCTIVAL FOLDS IN 21 CASES

Age (yrs)	Sex	Type of Folds	Eye	Aetiological Factors	Culture	Remarks
1½	M	Fornico-palpebral (pre-corneal)	Right	Acute conjunctivitis and caustic application	<i>Staph. pyogenes</i> <i>Strep. viridans</i>	
50	F	Superio-fornico-palpebral	Left	Trachoma and conjunctivitis	<i>Staph. albus</i>	Repeated attacks of conjunctivitis
3	M	Inferio-fornico-limbal	Right	Acute conjunctivitis and xerophthalmia	<i>Staph. albus</i> and Diphtheroids	
65	M	Superio-fornico-bulbar	Right	Traumatic conjunctivitis	Pneumococci	Bulbar end of the fold free
16	F	Superio-fornico-palpebral	Right	Conjunctivitis	Sterile	Three cysts in fold
27	F	Medial palpebro-palpebral Lateral palpebro-palpebral	Both Right	Trachoma and xerophthalmia	<i>Staph. albus</i> and <i>Candida albicans</i>	Parotid duct implanted in both eyes
24	M	Superio-fornico-limbal Superio-fornico-bulbar	Right Left	Stevens-Johnson syndrome and caustic applications	Sterile	Mucous graft
15	F	Lateral fornico-palpebral	Both	Trachoma and conjunctivitis	<i>Staph. albus</i>	
38	M	Medial fornico-corneal	Left	Conjunctivitis	<i>Staph. pyogenes</i>	Recurrent pterygium
8 mths	M	Palpebro-palpebral (pre-corneal)	Left	Acute conjunctivitis and silver nitrate application	<i>Staph. albus</i> and <i>Staph. pyogenes</i>	
27	M	Superio-fornico-limbal	Left	Trachoma	<i>Staph. albus</i>	Rolling and scraping done
70	M	Lateral palpebro-palpebral	Left	Trachoma and silver nitrate application	Diphtheroids	
24	M	Superio-palpebro-bulbar	Left	Trachoma and conjunctivitis	Sterile	Entropion operation
1	F	Superio-fornico-corneal	Right	Acute conjunctivitis (smallpox)	Culture not done	
22	M	Superio-palpebro-palpebral (aborted)	Both	Membranous conjunctivitis and xerophthalmia in both eyes	Sterile	Parotid duct implanted in left eye
8	M	Lateral palpebro-palpebral	Right	Subacute conjunctivitis and xerophthalmia	Diphtheroids and <i>Candida albicans</i>	
24	F	Superio-fornico-palpebral	Left	Acute conjunctivitis and perforated corneal ulcer	<i>B. pyocyaneus</i>	
9	M	Inferio-palpebro-palpebral	Right	Acute conjunctivitis and trachoma	Friedländer's bacillus	
65	F	Inferio-fornico-palpebral	Both	Subacute conjunctivitis and xerosis	<i>Staph. albus</i>	
4	M	Superio-fornico-bulbar	Left	Conjunctivitis and trachoma	Culture not done	
17	F	Medial fornico-bulbar	Right	Conjunctivitis and trachoma	<i>Staph. pyogenes</i>	

pterygium (Felin, 1905), epitarso (Schapringer, 1906; Wibaut, 1926; Taborisky, 1928; Lloyd, 1931), third eyelid (Robertson, 1906), tarsus duplex palpebrae (Adamück, 1907), congenital apron of palpebral conjunctiva (Tyson, 1913), supernumerary lid (Shoemaker and Alt, 1914), and epitarsolepharon (Shukla, 1960). The terms "tarsus duplex palpebrae", "third eyelid", and "supernumerary lid" are misnomers and have been rightly given up. "Conjunctival bridges and pouches", "congenital apron of palpebral conjunctiva", and "pseudopterygium" are descriptive but can be used only in a limited number of cases. The term "epitarso" has been widely used and incorporated in text-books as well. Like "epiblepharon" and "epicanthus", the term "epitarso" means some accessory structure on the anterior aspect of the tarsus, while the actual site of the fold is in the supratarsal or subatarsal regions. Therefore, in our opinion, the term "epitarso" should be given up and be replaced by the common term "accessory conjunctival fold". This term is simple and self-explanatory, and is in accordance with the anatomical attachments of the folds.

Aetiology

The aetiology of these accessory folds was speculated on for a long time. Schapringer (1899) assigned it to adhesions of amniotic bands with the developing ectoderm, but the idea was opposed on the grounds that such bands were not associated with gross anomalies of lids (Oeller, 1904). Herbert (1901), Campbell (1901), and Taborisky (1928) reported the condition as a sequel of croupous conjunctivitis. Wibaut (1926) suggested the abnormal remnants of upper and lower extensions of plica semilunaris as the probable cause of these folds. None of our cases had any abnormality of the plica, and only 3 out of 21 cases had folds on the medial side. Taborisky (1928) also reported that the condition is mostly seen on the lateral side. Abnormality of the plica seems unlikely as the cause of this condition.

In our series the causes of the fold formations are trachoma, acute membranous or pseudomembranous conjunctivitis, misuse of caustics, xerophthalmia, trauma, and rolling and scraping operations in the florid stage of trachoma. Higher incidence of folds in cases of trachoma and conjunctivitis proves that they are inflammatory in origin. An attack of acute conjunctivitis throws the redundant conjunctiva of the fornices into folds. These folds advance from the fornix towards the margin of the lid. An intact or ulcerated conjunctival surface can adhere to another ulcerated surface and lead to the formation of a fold. Sometimes redundant conjunctiva of the fornix may become attached to the palpebral conjunctiva or the bulbar conjunctiva (Fig. 1) or to the limbus or cornea (Fig. 2). Occasionally, the edge of the fold may remain free (Fig. 3). The greater frequency of these folds found in the upper cul-de-sac is related to the large expanse of the reflection of conjunctiva in the upper fornix (Herbert, 1901).

The formation of pre-corneal fold occurs from chemosis and ulceration of the conjunctiva of the upper and lower lids, which in turn leads to adhesions supported by the growth of fibrovascular tissue. These adhesions are subsequently stretched and granulation tissue is flattened between the eyeball and the lids (Fig. 4). Histopathologically, it consists of pseudostratified epithelial lining and chronic inflammatory cells, newly formed blood vessels, and fibrous tissue in the subepithelial core (Fig. 5), suggesting an inflammatory origin.

FIG. 1.—Superio-fornico-bulbar fold.

FIG. 2.—Medial blepharo-corneal fold.

FIG. 3.—Superio-fornico-bulbar fold with free bulbar end.

FIG. 4.—Palpebro-palpebral (pre-corneal) fold.

FIG. 5.—Histopathological section of the pre-corneal fold showing pseudostratified epithelium, chronic inflammatory cells, newly formed blood vessels, and fibrous tissue formation (H. and E. $\times 200$).

Prevalence

The prevalence rate of accessory conjunctival folds is difficult to determine unless they are especially looked for in routine clinical examinations. Considering the aetiological factors, it is likely to be greater in countries where trachoma is common and in countries where viral or bacterial conjunctivitis occurs in epidemics. Herbert (1901) collected 14 cases in a short period and concluded that the condition was not rare in India. Wibaut (1926) reported a prevalence of 1 in 1,000–1,500 in Amsterdam. Taborisky (1928) reported it to be 1 in 1,500–2,000 in Europe and 1 in 150 to 200 in Palestine. Satnam Singh and Grover (1960) found it to be 1 in 150 to 200 in rural parts of Northern India. Our figures for the same area are 1 in 300, while the outpatient figures are definitely less (1 in 900); these are not representative of the general population as most of these folds are asymptomatic and their finding is incidental.

Fate

Accessory conjunctival folds may take a variable course. Small, thin, folds may disappear with or without undergoing any cystic degeneration, while the larger ones may persist indefinitely. Although the majority remain asymptomatic some cases may undergo recurrent conjunctivitis, as folds encourage micro-organisms (Taborisky, 1928). The subsequent attacks of conjunctivitis may cause further adhesions and the fold becomes a pocket. These pockets may even disappear and assume the appearance of aborted folds.

Treatment

This consists of proper prophylaxis of acute conjunctivitis and avoidance of the extensive use of caustics, for which antibiotics and sulphonamides may be substituted. Scraping and rolling should be avoided, particularly in florid stages of trachoma. Medical treatment with local and sub-conjunctival steroids, fibrinolysin, and hyalase has given us discouraging results. In the majority of cases small folds do not warrant surgical excision, but when these folds are large enough to interfere with vision (e.g., pre-corneal) surgery may be advisable. Some cases require excision on cosmetic grounds.

Except for xerophthalmic eyes which show a tendency to recurrence, the prognosis is usually good.

Summary

(1) Twenty-one cases of accessory conjunctival folds were observed between September, 1962, and May, 1963.

(2) It is felt that the widely used term "epitarsus" should be given up in favour of "accessory conjunctival fold" which is in accordance with the anatomical attachment of the fold.

(3) Available evidence shows that the condition is caused by croupous or incompetently treated conjunctivitis.

(4) The prevalence rate of accessory conjunctival folds in Northern India is significantly high (1 in 300).

- (5) Accessory conjunctival folds are typed according to their sites and anatomical attachments.
- (6) The fate of the condition is variable.
- (7) The treatment of the fold is mostly surgical.

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