

Skin and eyes.

The skin covering the eyelids can be affected by whatever disorder and the dermatologist is the physician responsible for recognizing and treat such disorders. A skin disorder involving the skin of the eyelids unlikely affects simultaneously the cornea or other ocular structures, probably because there is a particular organ tropism and the skin of the eyelids belongs to the skin rather than to the eye. Two disorders characteristic of atopy are atopic dermatitis often localized on the eyelids and allergic conjunctivitis. However, these two disorders, although sometimes affecting the same subject, run an independent clinical course. Dermatitis is more precocious and spontaneously regress during summertime in most cases. Conjunctivitis starts later and worsens during summertime due to

photoexposure. The same argument applies to recurrent herpes simplex. Although herpetic involvement of both the skin of the eyelid and the cornea is rather frequent, exceptionally the eyelid skin and cornea are simultaneously affected (Fig. 1256).

The skin of the eyelids is thin, easily liftable, pliable and stretchable. Due to their characteristics, in case of water retention in the organism, tissue edema gets evident initially level with the eyelids. This is why nephrologists pay particular attention to this site. Moreover, inflammatory edema, whatever the cause responsible, is particularly evident level with the eyelids. The diagnosis of a skin disorder is more difficult on this site, as well as on the scalp, oral cavity, nails, palmar and plantar region. In the case of eyelid,



Fig. 1256: In this exceptional case, Herpes Simplex virus simultaneously affected both cornea, causing keratitis with residual nubecula, and eyelid skin, causing cutaneous recurrent herpes simplex.



Fig. 1257



Fig. 1258



Fig. 1259



Fig. 1260

Fig. 1257, 1258, 1259, 1260: Eyelid hypotrichosis in skin disorders such as ectodermal dysplasia (Fig. 1257), keratosis spinulosa follicularis decalvans (Fig. 1258) and trichotillomania (Fig. 1259). In Fig. 1260 hypertrichosis due to minoxidil.

the confusing factor, which makes disorders with different clinical features in other sites, very similar level with the eyelid, is edema itself, sometimes impressive.

The terminal hairs of eyelashes and eyebrows, which mark the borders of the eyelid, play a significant esthetical role and, moreover, protect the eyeball from external agents. Particularly, eyebrows prevent the sweat from dripping down the eye and the eyelashes are also a barrier against foreign bodies.

Eyelashes and eyebrows

Hypotrichosis. Eyelashes and eyebrows may thin out till their complete lack in some *inherited skin disorders* such as ectodermal dysplasia (Fig. 1257), keratosis follicularis spinulosa decalvans (Fig. 1258), ulerythema ophryogene and keratosis follicularis rubra. Hypotrichosis may occur in *thyroid dysfunction*, mainly affecting the external third of the eyebrow. *Alopecia areata* is responsible for hypotrichosis of the

eyelashes and/or eyebrows. The lack of eyebrows, due to its greater visibility, has a more important esthetical significance than the lack of eyelashes. *Trichotillomania* usually affects only eyebrows, because plucking one's eyelashes is much more painful.

Hypertrichosis of eyelashes and eyebrows may occur in *Cornelia de Lange syndrome*, characterized by longer and turned up eyelashes and thicker eyebrows. Hypertrichosis is also a *side-effect* of topical therapy with corticosteroids and minoxidil. The same effect can follow systemic treatment with cyclosporin. Steroid-induced hypertrichosis, which is nowadays rare due to the diffuse corticophobia, is responsible for thickening of the already existing hairs. The latter regresses spontaneously when withdrawing corticosteroids. Minoxidil-induced hypertrichosis mainly affect teenagers, especially with concentration higher than 2%. Also cyclosporin can be responsible for hypertrichosis on the forehead and eyebrows (Fig. 1260).

A tuft of **white eyelashes and/or eyebrows** can be observed in segmental vitiligo (Fig. 1261) and is usually more visible than vitiligo affecting the surrounding skin. The regrowing hairs of alopecia areata can be initially white.



Fig. 1261: Segmental vitiligo of the eyebrow with a tuft of white hairs.

Phthyrasis of the eyelashes (Fig. 1262) is a typical disorder of childhood caused by *Phthyrus pubis*. An innocent contagion from a parent with phthyrasis of the pubis is usually responsible, whereas in adulthood the infestation is due to sexual contagion. The child more often comes due to the presence of maculae ceruleae



Fig. 1262: Nits in phthyrasis of the eyelashes (courtesy of Prof. Patrizi).



Fig. 1263

Fig. 1263, 1264: Dermoid cyst (Fig. 1263) and pilomatrixoma (Fig. 1264) of the eyebrow.



Fig. 1264

on the trunk, namely bluish spots probably due to the migration of the parasite. Phthiriasis of the eyelashes can be initially confused with an atopic blepharitis. However, at a closer observation (Fig. 1262) the typical oval nits and the self-moving parasites can be seen. Phthiri can be also observed level with the hairline in the retroauricular region. The treatment of phthiriasis is based on the manual removal of nits and

parasites, with the help of a stick enveloped by cotton wool and soaked by petrolatum. 1% permethrin is used for parasites of the hairline.

Persistent tumefactions. Dermoid cyst is the most characteristic tumefaction of the eyebrow. It is usually located on the external third of the eyebrow (Fig. 1263) since birth or from the first months of life. Dermoid cyst is an oval nodule, covered by normal skin, with smooth surface,



Fig. 1265

Fig. 1265; 1266: Molluscum contagiosum (Fig. 1265) can be located on the free border of the eyelid (Fig. 1266).



Fig. 1266



Fig. 1267

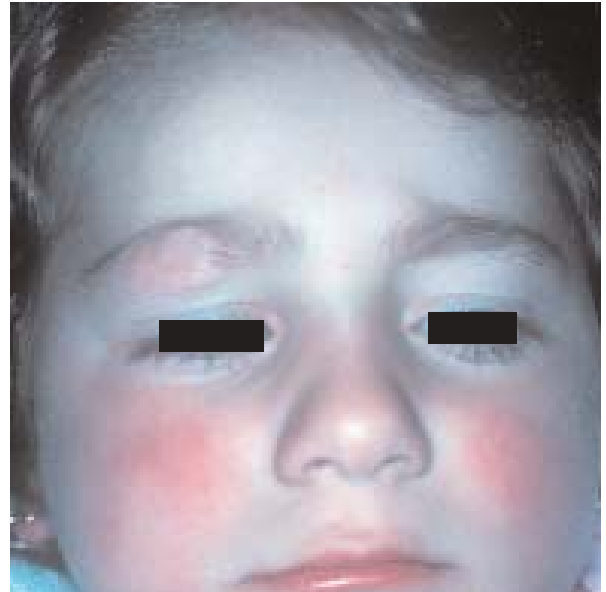


Fig. 1268

Fig. 1267, 1268: Hemangioma of the eyebrow (Fig. 1267) regresses, leaving broadened and thinned hairs.

hard elastic, movable on the deep and superficial layers, non painful, unless it is pressed against the underlying bone. The surgical removal of dermoid cyst should be guided by esthetical purposes. General anesthesia should be adopted when removing the cyst in the first decade. When the cyst is not clinically evident, it should be removed as soon as local anesthesia is practicable.

Also calcifying epithelioma or *pilomatrixoma* (Fig. 1264) can be located on the eyebrow. As compared with dermoid cyst, its surface is more irregular, its color bluish or yellowish and its consistence is hard. Pilomatrixoma may undergo rapid inflammatory tumefaction and then turn back to its original size within several months when the inflammation regresses.

Among the persistent tumefactions of the eyelashes there is *molluscum contagiosum* (Fig. 1265). More often than other virus neoformations, it is sometimes located on the free border of the eyelid (Fig. 1266) or among the eyelashes. It consist of a small, white-yellow papule with a small central depression when fully developed.

Its removal from the free border is difficult and painful, because anesthesia is not always possible. Molluscum contagiosum relapses less frequently than flat warts. Also warts can be

located on the eyelid, especially filiform wart, which is 1 mm large and many mm long. It should be removed with a curette under local anesthesia because of the significant esthetical damage.

Hemangioma can affect the eyebrows (Fig. 1267, 1268), where it behaves as elsewhere, namely it regresses spontaneously within years. However, in this site regression is usually associated with broadening and thinning of the eyebrow (Fig. 1268), which cannot be easily corrected. The same problem occurs in this site with congenital melanocytic nevi, although with a different clinical course. The latter are usually responsible for thicker and darker hairs, which cannot be easily corrected.

Inflammatory tumefaction of the eyelid

As above mentioned, inflammatory -and non-edema is particularly marked on the eyelids and makes the difference between various skin diseases less evident.

Herpes simplex (HS) of the eye is usually a secondary manifestation and thus is characterized by an acute, recurrent clinical course.

Recurrent HS may affect both the lower eyelid due to extension of the very frequent HS of



Fig. 1269

Fig. 1269, 1270: Recurrent herpes simplex is associated to edema of the upper (Fig. 1269) or lower (Fig. 1270) eyelid.



Fig. 1270

the cheek (Fig. 1270) and the upper eyelid (Fig. 1269), exceptionally the mucosa (Fig. 1271, 1272).

On the upper eyelid edema is particularly important and may lead to the closure of the eye. The typical clustered pustules stand out on the edematous eyelid (Fig. 1269).

Also *herpes zoster* in this site is responsible for significant and persistent edema. There is a characteristic sharp demarcation on the midline level with the forehead (Fig. 1273). The pain is less important than in adults, but present, especially in the severe cases, symptomatic of immune depression (Fig. 1273, 1274).



Fig. 1271

Fig. 1271, 1272: Recurrent herpes simplex of the cheek exceptionally is associated to conjunctivitis (Fig. 1271) or keratitis. In Fig. 1272 fluorescein puts in evidence the involvement of the cornea.

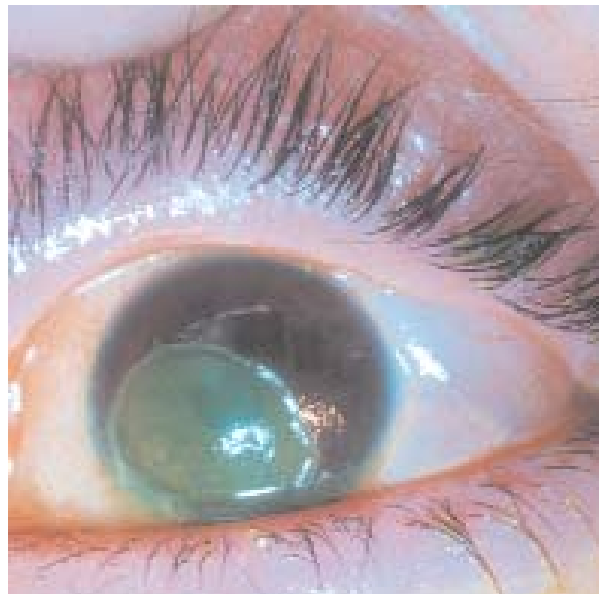


Fig. 1272



Fig. 1273: Ophthalmic herpes zoster with sharp demarcation on the midline.

Pyoderma of the eyelid usually starts from the lateral or medial (Fig. 1273) commissura. It is characterized by eroded and crusted lesions with typical centrifugal extension in days. Edema is usually slight.

Erysipelas is due to *Streptococcus beta-hemolytic*, isolated or more often with



Fig. 1274: Ophthalmic herpes zoster in an immunocompromised child with marked edema of the eyelid.

Staphylococcus aureus. It occurs in immunocompromised children due to malignancy or immunosuppressive treatment. Erysipelas is characterized by a round, well demarcated lesion with raised peripheral border. Usually, there are not pustules. Also in erysipelas edema is marked (Fig. 1276).



Fig. 1275

Fig. 1275, 1276: Pyoderma (Fig. 1275) starting from the medial commissura with a secondary pustule on the nose. In Fig. 1276 erysipelas in an immunocompromised subject with secondary closure of the eye.



Fig. 1276



Fig. 1277



Fig. 1278

Fig. 1277, 1278: In Fig. 1277 the bite of a mosquito causes marked edema of the upper eyelid. You can see the residua of other bites -arrows-. In Fig. 1278 leishmaniasis of the left upper eyelid.



Fig. 1279



Fig. 1280



Fig. 1281

Fig. 1279, 1280, 1281: Caterpillar dermatitis is caused by larvae of butterfly (in procession in Fig. 1281). The hairs of these larva, carried out from the wind, are responsible of dermatitis in exposed areas and can penetrate into the cornea (Fig. 1280).

The bite of mosquitos in subjects with *hypersensitivity to saliva of mosquito* is responsible level with the eyelid of marked edema, mainly on the upper eyelid, with frequent closure of the eye (Fig. 1277). According to the history, the lesion develops within hours and, on dermatological examination, an intensely itchy central punctiform papule is visible. The occurrence in summertime, the history of previous bites and the presence of other bites on exposed areas (Fig. 1277, arrows) makes the diagnosis easier. The wheal regresses within 1-2 days, whereas the central punctiform papule persists for several days.

Leishmaniasis is characterized by an inflammatory hard elastic nodule with a central area of softening, often covered by scales and crusts (Fig. 1278). The diagnosis is supported by the provenience of the patient from an endemic area and the scarce symptoms. It is then confirmed by the presence of leishmaniae in the fresh examination, carried out on the border of the softening area with a curette.

In *caterpillar dermatitis* (Fig. 1279) the skin lesions are due to the urticating hairs of caterpillar (Fig. 1281), which is the larval stage of a butterfly. The hairs are released from the nest located among the branches of the infested pine or by the caterpillars themselves thanks to the

contraction of the abdominal muscles. Carried out from the wind, the urticating hairs arrive on exposed areas, including conjunctiva and cornea, and can penetrate into the latter (Fig. 1280), causing lacrimation and intense nuisance, until they are removed.

Atopic dermatitis affects the eyelids, besides the forehead and the cheeks, from the first year of life. Later on, when the lesions of the cheeks and forehead regress, often the eyelids are still involved (Fig. 1283), together with the lips, till the adulthood.

The eyelid lesions are usually erythematous and edematous and the severity of the edema is related to the severity of dermatitis. A marked edema preludes to the appearance of exudation. The persisting inflammation often makes the eyelid folds more evident -Morgan fold- (Fig. 1282) and sometimes is responsible for a rhagadiform erosion in the bottom of the fold. Shadows under the eyes, due to the continuous rubbing of the eyelids, can be also associated.

Characteristically, the involvement of the eyelids in atopic dermatitis runs a chronic and relapsing clinical course with summer improvement and worsening in spring and autumn. Atopic blepharitis involving the free border of the eyelids is more often associated to atopic conjunctivitis than to dermatitis of the eyelids.



Fig. 1282: Morgan fold of atopic dermatitis.



Fig. 1283: Atopic dermatitis of the eyelids in a boy.



Fig. 1284



Fig. 1285

Fig. 1284, 1285: Angioedema of the eyelids of a single eye (Fig. 1284) or asymmetrical of both eyes (Fig. 1285).

Urticaria of the eyelids is characterized by white edema (Fig. 1284, 1285) starting rapidly and leading in hours to the reduction of “rima palpebrarum”, usually asymmetrical, sometimes symmetrical (Fig. 1286, 1287).

Its rapid regression within 1-2 days, the history of previous episodes and the presence of favoring factors, such as a febrile episode or malaise, lead in most cases to the right diagnosis.

Fixed drug eruption got more rare in Italy after the withdrawal from the market of drugs containing feprazone. It is characterized by erythematous or erythematous and bullous (Fig. 1289) lesions, relapsing always on the same site after every intake of the responsible drug. Characteristically, when the drug is withdrawn, the inflammation regresses leaving purple pigmentary residua on the skin (Fig. 1288), nothing on the mucosae.



Fig. 1286



Fig. 1287

Fig. 1286, 1287: IgE mediated angioedema of the eyelids caused by banana, after 3 (Fig. 1286) and 24 (Fig. 1287) hours.



Fig. 1288

Fig. 1288, 1289: Purple residua of fixed drug eruption (Fig. 1288), in acute bullous phase in Fig. 1289.



Fig. 1289

The eyes are severely affected in *toxic epidermal necrolysis* (TEN) caused by drugs or virus infections. This syndrome is characterized by large flaccid blisters giving to the skin a burn-like appearance (2). In childhood the same syndrome can be also caused by *Staphylococcus aureus* -Staphylococcal scalded skin syndrome or 4S syndrome-. The differential diagnosis between these three forms in childhood is very important from a prognostic and therapeutic point of view (see page 70 and 71 of this issue). Although the staphylococcal variant is very severe, it can be treated better than the drug- and virus-induced TEN, when rapidly recognized. The drug-induced TEN, for instance that one caused by allopurinol, can be in childhood less severe, because the withdrawal of the suspected drugs is the first therapeutic step, when the causative factors are not clear. On the other hand, the virus-induced form is sometimes more severe, because it is not possible to rule out the triggering cause and one should wait for the spontaneous resolution due to the specific immunological defense.

The differential diagnosis between the viral and drug-induced form is usually not possible with the history or the clinical features (1). In the history exceptionally the infectious agents can be differentiated from the pharmacological

ones. Moreover, both forms start with a punctiform exanthem, probably because in both cases immune complexes play a significant role in the pathogenesis. On the other hand, the staphylococcal form is rather different because it starts with a staphylococcal focal infection such as pyoderma, conjunctivitis, vulvovaginitis and is not clinically associated with a punctiform exanthem. On histological examination (3, 4) the cleavage is intraepidermal in the staphylococcal form, dermoepidermal in the drug or virus induced form.

In the drug- or virus-induced TEN the involvement of the oral and genital mucosae is more frequent and important (3, 4). With regard to the eye, drug- or virus-induced TEN is characterized by exudating conjunctivitis requiring an ophthalmological follow up. 4S syndrome is usually not associated with eye involvement, unless it starts with a staphylococcal conjunctivitis.

Stevens-Johnson syndrome, which is due to a virus or a drug, is characterized by the orificial and periorificial involvement. There are transition forms between this syndrome, erythema multiforme and fixed drug eruption, which are less severe, and TEN, which is the most severe. Eye is not always affected in Stevens-Johnson syndrome.



Fig. 1290: Flexural psoriasis with erythematous and scaling lesions of the medial eyelid region.

In *flexural psoriasis*, besides the involvement of armpits and groins, characteristic is the involvement of the medial third of the eyelids (Fig. 1290), mainly upper eyelids. Itching is scarce or lacking, erythema is more or less intense, the borders of the lesions are clear-cut and the scales are thin and less visible than in other sites



Fig. 1292: Segmental scleroderma of the eyelid.



Fig. 1291: In erythrodermic psoriasis the persistent inflammation can be responsible for ectropion.

with tick skin such as the extensor aspect of knees and elbows. The eyelid lesions can be the first and only manifestations of psoriasis, although other sites of flexural psoriasis such as groin and armpits, or classical psoriasis are usually involved. Severe, erythrodermic psoriasis as whatever severe and persistent inflammation of the face can be responsible for ectropion (Fig. 1291).

The eyelids are often involved in several *connective tissue diseases*, but particularly in lupus erythematosus, scleroderma and dermatomyositis.

In systemic lupus erythematosus the eyelids are often symmetrically affected. In generalized cutaneous scleroderma chronic inflammatory edema can be responsible level with the eyelids for folds and erosions reminiscent of those ones observed in atopic dermatitis.

The eyelids can be also affected in segmental cutaneous scleroderma and in Parry-Romberg syndrome. In segmental scleroderma the involvement of the eyelid is more evident when the patients try to close their eyes (Fig. 1292). In this situation the lack of eyelashes and the sclerosis of the skin of the upper eyelid, preventing the complete closure of the “*rima palpebrarum*”, get much more visible.

Fig. 1293, 1294, 1295: In dermatomyositis the eyelids are affected more than in other connective tissue diseases. The lesions range from the precocious, erythematous and edematous with lilac hue (Fig. 1293), to the crusted and then atrophic (Fig. 1295) infarct lesions and to blood lacunae (Fig. 1294), which indefinitely persist with time.



Fig. 1294

In dermatomyositis the eyelids are affected more than in other connective tissue diseases. Its early manifestations are reminiscent of photo-dermatitis or systemic lupus erythematosus and thus characterized by butterfly erythema. As compared with systemic lupus erythematosus, the lesions of dermatomyositis present a lilac hue (Fig. 1295) and, above all, are characterized by a more marked edema of the eyelids, although the latter does not lead to the closure of the eye (Fig. 1293). Besides the early erythematous

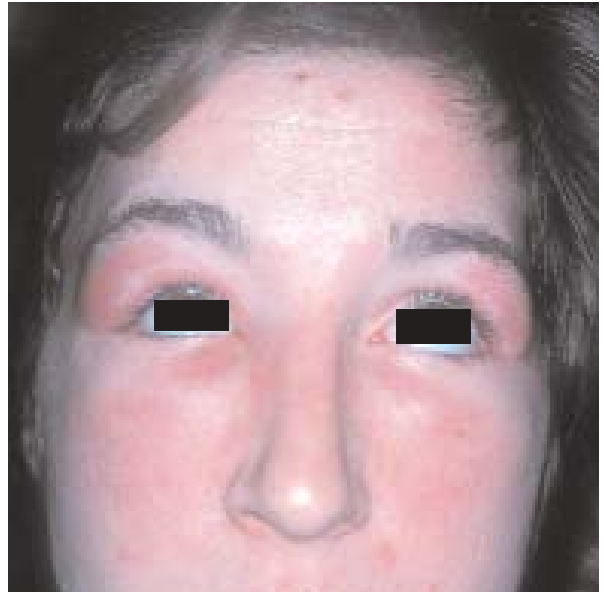


Fig. 1293



Fig. 1295

and edematous lesions, full developed dermatomyositis is characterized by atrophic lesions (Fig. 1295) and by vascular lesions. The latter includes infarcts and blood lacunae, which indefinitely persist with time. The infarcts of the eyelids are similar to those ones occurring in all the systemic connective tissue diseases, namely manifest themselves as crusted and then atrophic lesions (Fig. 1295). The blood lacunae are lacunae filled in with blood, appearing as red spots (Fig. 1294), which persist with time.



Fig. 1296



Fig. 1297



Fig. 1298

Eye and inherited skin disorders

Neurofibromatosis type I can present level with the eyelids plexiform neuroma deforming the eyelid (Fig. 1296). These tumors are characterized at palpation by a soft consistence and ill defined borders. Due to their precociousness, sometimes they are a clue to the right diagnosis. Among the primary diagnostic criteria for the diagnosis of neurofibromatosis type I there are other two ocular manifestations, namely gliomas

Fig. 1296, 1297, 1298: In Fig. 1296 plexiform neuroma of the left upper eyelid in a little girl with neurofibromatosis type I. In Fig. 1297 fibrous plaque of the forehead and right upper eyelid in a subject with tuberous sclerosis -you can see angiomas around the nose-. In Fig. 1298 ectropion in a newborn with congenital erythrodermic ichthyosis.

of the optic nerve and Lisch nodules. The former are often a surprise of MR images. The latter are melancytic nevi of the iris, very useful from a diagnostic point of view due to their high frequency in adults. *Tuberous sclerosis* can be responsible for fibrous plaques also affecting the eyelids (Fig. 1297). Often present at birth, the latter make sometimes the diagnosis easier. In *incontinentia pigmenti* the most severe problem is the detachment of the retina, whereas in *albinism* there can be nystagmus and photophobia.

Blisters of the conjunctiva are characteristic of *epidermolysis bullosa dystrophicans recessiva*. They are responsible for acute and relapsing crises of pain and later on for synechiae, which alter the ocular mobility, requiring an operation of “débridement”.

In the severe cases of *congenital erythrodermic ichthyosis* ectropion is present since birth (Fig. 1298) and persists indefinitely, requiring the use of artificial tears in the mild cases and corrective operations in the most severe cases.



Fig. 1299



Fig. 1300



Fig. 1301

Angioma of the eyelid

The most frequent type of angioma of the eyelid is *midline telangiectatic nevus*. The latter is present at birth on the medial third of the eyelid and spontaneously regresses within a few months in most cases

Port-wine stain is also present at birth but indefinitely persists with time. When the first branch is involved, the upper eyelid is affected, whereas the lower eyelid is affected when the

Fig. 1299, 1300, 1301: The same patient when aged 25 days during the first visit (Fig. 1299), at the age of 50 days (Fig. 1300), when the oral treatment with steroids was started and finally when aged 16 years (Fig. 1300), before starting the treatment with pulsed dye laser at 585 nm to improve the residual telangiectases.



Fig. 1302: Nevus of Ota with conjunctival and follicular punctate cutaneous lesions.

second branch. Port-wine stain can be associated to meningeal and ocular -glaucoma- involvement. The more diffuse the involvement of the two trigeminal branches and more complete the involvement of the upper eyelid, the more frequent this association.

Hemangioma of the upper eyelid is more dangerous as compared with the involvement of the lower eyelid, because it can be responsible for “amblyopia ex non usu”, due to closure of the eye and absence of stimulation of cones and rods, trichiasis with consequent corneal lesions, loss of binocular vision, strabismus and blindness.

Hemangioma of the eyelid is usually treated with oral corticosteroids (Fig. 1299, 1300, 1301) when its growing could likely affect the ocular function or cause a significant esthetical damage. In case of trichiasis, diathermocoagulation of the eyelashes is indicated.

References

- 1) Bonifazi E. - Diagnosi Differenziale in Dermatologia Pediatrica: Necrolisi epidermica da farmaci o virale/ Necrolisi epidermica stafilococcica (4S). Eur. J. Pediat. Dermatol. 13, 70-1, 2003.
- 2) Lyell A. - Toxic epidermal necrolysis (the scalded skin syndrome): a reappraisal. Br. J. Dermatol. 100, 69-81, 1979.

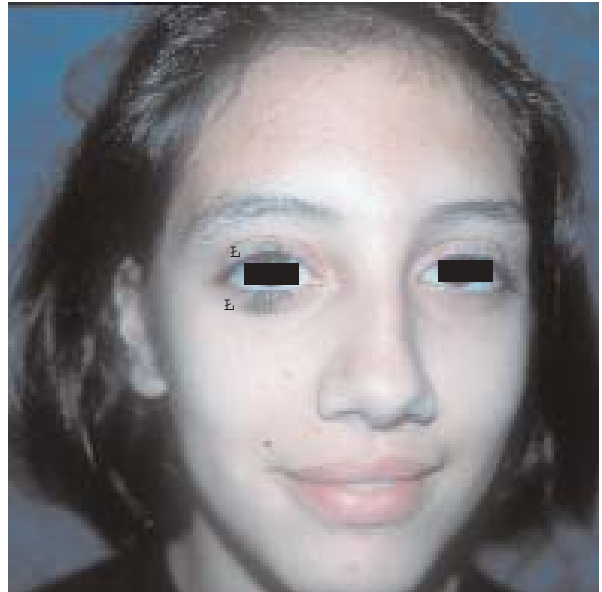


Fig. 1303: Congenital melanocytic “kiss nevus” affecting both eyelids -arrows-.

Nevi of the eyelid

Nevus of Ota, which is composed by dermal melanocytes, is a characteristic lesion of the eyelid (Fig. 1302). It affects the temporal and parietal region, the eyelid and the scleral conjunctiva.

Nevus of Ota has an esthetical significance, not being usually associated with deep malformations.

Often it has a characteristic follicular shape, probably due to the distribution of the melanocytes around the hair follicles.

Kiss nevus, namely a congenital melanocytic nevus affecting both the upper and lower eyelid (Fig. 1303, arrows) with the two parts perfectly meeting, is characteristic of the eyelid. Its distribution testifies that the nevus originated during the fetal life in a period preceding the separation of the two eyelids.

- 3) Rasmussen J. - Toxic epidermal necrolysis. A review of 75 cases in children. Arch. Dermatol. 111, 1135-9, 1975.
- 4) Ruiz-Maldonado R. - Acute disseminated epidermal necrosis types 1, 2, and 3: study of 60 cases. J. Am. Acad. Dermatol. 13, 623-35, 1985.