REVIEW ARTICLE

Yellow and orange in cutaneous lesions: clinical and dermoscopic data

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Abstract

Colour of the lesions is clue for the clinical and dermoscopic diagnosis. Nevertheless, we have detected in the literature an uneven relevance of the colours as a diagnostic criterion. Thus, while red, brown and blue have taken important role in dermoscopic descriptions, other like yellow and orange have been given much less importance. This article reviews those lesions in which the yellow and orange colours have been considered constitutive or essential for diagnosis, and on the other hand it emphasizes the entities in which may appear these colours and are not well reflected in the literature. We believe that organize all this information will help us in a better understanding of these pathologies.

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Background

Colour in cutaneous lesions, together with their shape, gathering or distribution, is a great help in the clinical dermatological diagnosis. Additionally, each of the colours indirectly gives us information about their chemical composition, and therefore allows us to know the nature of the lesions better. In dermoscopic descriptions the colours red, brown and blue have taken on an important role, but other colours like yellow and orange have been given less importance. Thus, orange and yellow colours have been described in very few conditions.[1–4] Indeed, in dermoscopy yellow colour has been linked just to keratin and lipids, and accordingly, it is seen mostly in keratinizing tumours, tumours with sebaceous differentiation and juvenile xanthogranuloma and, on the other hand, orange colour has been described mainly in granulomatous skin diseases.[5]

This article aims to review those lesions in which the yellow and orange colours can be seen constitutive or essential for the diagnosis and to describe a range of skin diseases, in which these colours may appear and are not well reflected in the literature.

In order to do this, we have made a review of the classic dermatological books,[1–3] dermoscopy texts[4,5] and Pubmed (NCBI), searching for information about these colours in clinical and dermoscopic contexts. The search was performed with the keywords yellow, yellowish, orange, dermoscopy, dermatoscopy, dermoscopic and epiluminescence. Additionally, in order to illustrate this, we have included some lesions in which these two colours appeared in the photographic archive collected from two hospitals in Alicante and Tarragona (Spain). Dermoscopic images of each lesion were obtained using DermLite Foto (3Gen, LLC, Dana Point, CA, USA) mounted on a digital camera.

We classified the entities in two groups: those ones in which these colours are clue for the diagnosis (we have called them 'predominantly yellow or orange skin conditions'), and on the other hand those ones in which these colours may appear occasionally and their presence should not surprise us and should not exclude a determined diagnosis (we have call them 'skin conditions that can occasionally be yellow or orange'). We further classified these entities into: (i) Non-inflammatory, non-tumoral, (ii) tumoral lesions and (iii) inflammatory and/or infectious lesions. Finally, we have elaborated two simple algorithms one for each colour.

Predominantly yellow skin conditions

Non-inflammatory, non-tumoral

Certain endogenous or exogenous pigments may alter skin pigmentation. Thus, hyperbilirubinemia, carotenemia[6] and

pigmentation due to certain drugs, especially quinacrine,[7] can stain skin yellow or orange. Cadmium sulphide[8] is a yellow pigment that is used in tattoos and on dermoscopy we have seen a yellow homogeneous colour in a patient.

Some skin disorders of elastic fibres can make the skin becomes yellow. Solar elastosis is defined as changes in colour and texture of the skin induced by the cumulative effect of ultraviolet radiation in the superficial dermis, and it is observed clinically and on dermoscopy with a yellowish tone (Fig. 1A). Pseudoxanthoma elasticum is an inherited disease characterized by degenerative changes affecting the elastic fibres of the dermis and of other tissues that can produce systemic involvement. The elastic fibres are thickened, fragmented and subsequently, these fibres undergo calcification. Small yellow papules appear particularly on skin folds with a pebble appearance.[9] There has been no dermoscopic description of these lesions, so far. Papillary dermal elastolysis is a pseudoxanthoma elasticum-like disorder consequence of subclinical photodamage. It is characterized by yellowish papules localized on the lateral sides and back of neck, supraclavicular regions and axilla. The main histopathologic features include a marked reduction in elastic fibres in the papillary dermis and melanophagia.[10] Dermoscopic examination reveals multiple yellow papules coalescing to form plaques with apparent linear vessels.[11] Mid-dermal elastolysis is a rare acquired disorder in which there is a band-like absence of elastic tissue limited to the mid-dermis. It is characterized clinically by yellow–white plaques with diffuse fine wrinkling, most often located on the trunk, neck and arms.[9]

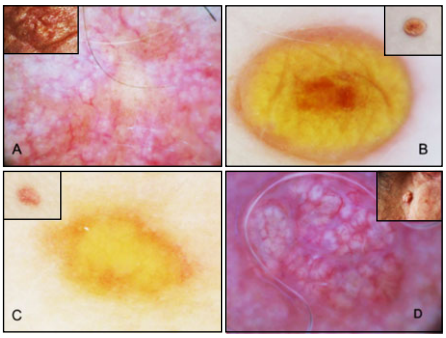

Figure 1 Examples of predominantly yellow skin conditions. (A) Solar elastosis on the forehead in a 78-year-old man. A yellow–orange hue and telangiectasia are observed. (B) Juvenile xanthogranuloma located on the arm in an 8-year-old girl. The lesion is predominantly yellow, with orange hue in the centre, and a peripheral red rim, giving a 'setting sun' appearance. (C) Cutaneous mastocytoma located on the thigh of a 4-year-old boy. On dermoscopy, a central yellow uniform colour surrounded by an erythematous halo is observed. (D) Sebaceous hyperplasia on the right mandibular angle in 65-year-old woman. On dermoscopy, it shows yellow lobular-like structures, central umbilication and peripheral telangiectasia ('crown vessels'). DermLite Foto; 3Gen, LLC, Dana Point, CA, USA. Original magnification ×10.

In disorders in which there is accumulation of keratin-like calluses, corn or ichthyosis,[12] there is a yellowish colour in the skin. On dermoscopy, callus show yellow homogeneous opacity while corns demonstrate a translucent central core surrounded by a yellow rim.[13]

Cutaneous xanthomata develop as the result of intracellular and dermal deposition of lipid. Clinically they are seen as macules, papules or plaques of a typical yellowish colour but can also be orange or pink. That colour is due to the presence of lipid-laden macrophages.[14] Verruciform xanthoma of the skin is an extremely rare entity, which appears as a yellow or erythematous warty or polypoid lesion.[14] Most cases described have arisen on anogenital skin, and they may develop as a reactive phenomenon. Dermoscopic description has shown yellow dots and debris surrounded by a marginal whitish rim.[15]

Cutaneous non-Langerhans cell histiocytosis is a group of disorders defined by the proliferation of histiocytes that do not easily fit into the usual categories of biological behaviour as tumours or inflammatory lesions. They are manifested as papules, plaques or nodules often yellowish due to the presence of foamy lipid-laden histiocytes.[16] Dermoscopic descriptions have been done of juvenile xanthogranuloma (JXG) and solitary reticulohistiocytoma. JXG is a benign disorder that presents characteristically in early childhood. Typically it is manifested as a solitary yellowish or orange, skin papule or nodule and it generally follows a benign course with spontaneous resolution over a period of a few years. Histologically, JXG is characterized by the presence of histiocytes, foam cells and Touton giant cells.[17] Dermoscopic features of JXG varies according to the time of evolution in which the lesion is located. In early lesions with abundant vacuolated or xanthomatized cells the typical appearance is the 'setting sun' appearance (Fig. 1B). In late stages, with plenty of spindle cells, other dermoscopic structures can be seen as 'clouds' of paler yellow to orange-yellow globules and whitish streaks. Branched vessels can be observed in every stage.[18–20] Solitary reticulohistiocytoma is a lesion of an unknown aetiology, that affects young adults and it can occur in any cutaneous location. When there are multiple lesions, it is called reticulohistiocytosis, and there may be systemic involvement.[17,21] Its most frequent dermoscopic image is, like JXG, a 'setting sun' pattern with a central yellow core and a peripheral erythema.[20–22]

Tumoral lesions

Cutaneous mastocytoma (CM) is a localized variant of mastocytosis characterized by excessive cutaneous accumulation of mast cells without associated extracutaneous organ involvement.[17] On dermoscopy, CM is seen with a central yellow uniform colour which is explained by the accumulation of mast cells occupying the dermis surrounded by an erythematous halo representing the secondary vascular dilatation by degranulation of the mastocytes. That image has also been called the yellow–orange spot pattern or the yellow–orange blot (Fig. 1C).[23,24]

Several sebaceous tumours and related disorders are yellowish. Sebaceous hyperplasia, sebaceous adenoma, sebaceoma and sebaceous carcinoma can appear isolated or multiple, and they can be a marker of Torre–Muir syndrome.[25] All these lesions usually appear yellow in dermoscopy by the presence of abundant sebocytes. Sebaceous hyperplasia shows yellow lobular-like structures, central umbilication and peripheral telangiectasias 'crown vessels' (Fig. 1D).[26,27] In sebaceous adenoma and sebaceoma a central homogenous yellowish background with 'crown vessels' are also seen.[28–30] In sebaceous carcinoma a homogenous yellowish background with a polymorphous vascular pattern and sometimes ulceration have been described.[30] Steatocystoma multiplex is a rare condition that is characterized by cutaneous cysts and may be inherited in an autosomal dominant manner or may occur sporadically, which present as numerous yellowish papules on the chest.[25] Naevus sebaceous of Jadassohn is a congenital hamartoma, that presents as a yellowish flat or mammillated plaque on the scalp or on the face.[25] On dermoscopy we can observe yellowish lobular-like structures and displaced blood vessels.[28]

Inflammatory or infectious lesions

Pityriasis rosea exhibits on dermoscopy a yellowish background colour and peripheral whitish scales.[31,32] In seborrhoeic dermatitis has been reported the presence of punctate vessels and yellowish scales. In impetigo and nummular eczema there are yellowish crusts, corresponding to desiccation of seropurulent exudate.[31,32]

Dermatosis predominantly orange

Non-inflammatory, non-tumoral

Cutaneous xanthomas (CX) are usually yellowish but they can also be orange or pink. That colour is due to the presence of lipid-laden macrophages.[14] Juvenile xanthogranuloma (JXG) can also be seen orange in colour (Fig. 2A). In these cases, JXG can mimic basal cell carcinoma, especially when presents branched vessels.[33]

Inflammatory lesions

In cutaneous granulomatous skin lesions in which granulomas were located superficially in the dermis, diascopy was used classically, and with this technique it was described a typical 'apple jelly' colour in these lesions. However, the descriptions of the dermoscopic features of granulomatous diseases are relatively rare. In sarcoidosis (Fig. 2B), lupus vulgaris and granulomatous rosacea orange-yellowish areas and linear branching vessels are seen.[31,34,35] The characteristic dermoscopic pattern of necrobiosis lipoidica consists of a network of prominent linear arborizing vessels on a yellowish or orange background (Fig. 2C).[36–38] Granuloma annulare has been dermoscopically typified by peripheral, structureless orange-reddish borders and sometimes

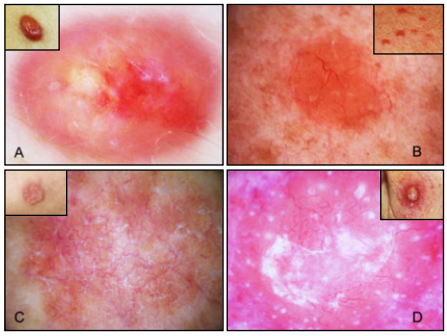

Figure 2 Examples of dermatosis predominantly orange. (A) Juvenile xanthogranuloma located on the thigh in an 11-year-old girl. On dermoscopy, the lesion is predominantly orange, with a peripheral red rim, giving a 'setting sun' appearance. (B) Several orange papules of cutaneous sarcoidosis on the back of a 60-year-old woman with pulmonary sarcoidosis. On dermoscopy, a uniform orange colour and branched telangiectasia is seen. (C) Plaque of necrobiosis lipoidica on a leg of a 40-year-old man. On dermoscopy, a network of prominent linear arborizing vessels on an orange background is observed. (D) Leishmaniasis in the left cheek of an 89-year-old woman. On dermoscopy, erythema-orange background, 'yellow tears', hyperkeratosis and branched vessels. DermLite Foto; 3Gen, LLC, Dana Point, CA, USA. Original magnification ×10.

by unfocussed small vessels.[36] In cutaneous leishmaniasis (Fig. 2D), the following dermoscopic features have been observed: erythema-orange background, 'yellow tears', hyperkeratosis, ulcerations, 'white starburst-like pattern' and a variable vascular pattern.[39]

Pityriasis rubra pilaris (PRP) is characterized by scaly red-orange plates showing follicular hyperkeratosis, palmoplantar keratoderma and sometimes erythroderma.[40] Dermoscopic pattern of PRP consists of round/oval orange-yellowish areas surrounded by vessels of mixed morphology.[41,42]

Skin conditions that can occasionally be yellow

Non-inflammatory, non-tumoral

Deposition of certain substances located very superficially in dermis can be seen yellowish. Superficial or ulcerated gouty tophi can be observed yellow in colour. Dermoscopic features of an ulcerated tophus have been described as whitish yellowish areas forming irregular striations which resemble antlers alternating with reddish areas, with some bright globules.[43] In superficial calcinosis cutis a yellow–white colour can be observed.[44]

Fat herniations can be seen in isolation or associated to focal dermal hypoplasia (Goltz syndrome), and they manifest as soft, yellow–pink cutaneous nodules.[45] In cutaneous surface lipomatous naevus, the presence of groups of mature adipocytes located superficially in the dermis gives a yellowish or normal skin (Fig. 3A).[46]

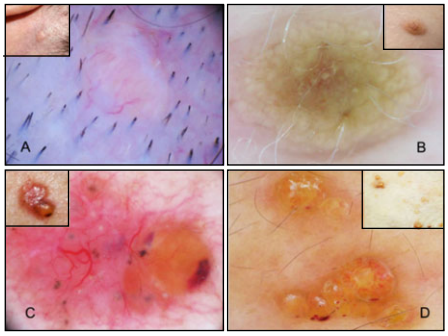

Figure 3 Examples of lesions that can occasionally be yellow. (A) Cutaneous naevus lipomatosus located on the nape of a 69-year-old woman. On dermoscopy, a pale yellow–orange papule with some telangiectasia is observed. (B) Melanocytic naevus on the neck in a 12-year-old male albino patient. On dermoscopy, yellowish lobular-like structures resembling sebaceous hyperplasia and central dotted vessels are observed. (C) Basal cell carcinoma on the chest in a 70-year-old woman. On dermoscopy, yellowish-orange hue areas which extend partially in the lesion, forming leaf-like areas and branched telangiectasias are observed. (D) Cutaneous lymphangioma circumscriptum presents on the chest of a 32-year-old man. On dermoscopy, we observe yellow lacunas tinged with blood surrounded by paler septa and some fine telangiectasia. DermLite Foto; 3Gen, LLC, Dana Point, CA, USA. Original magnification ×10.

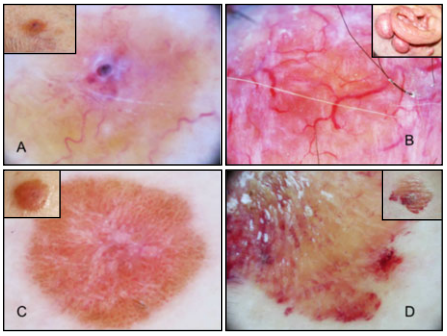

Figure 4 Example of lesions that can occasionally be orange. (A) Targetoid haemosiderotic haemangioma, in its later stages, on an arm of a 78-year-old man. On dermoscopy, we can see yellowish-orange homogeneous coloration around a central vascular lesion, with radial telangiectasia. (B) Cylindromas in retroauricular area in a 55-year-old woman with a Brook-Spiegler syndrome. On dermoscopy, we can see areas of background pink and orange coloration with arborizing telangiectasia. (C) Spitz naevus on a thigh of a 30-year-old woman. On dermoscopy, orange coloration with white streaks and dotted vessels are observed. (D) Extragenital bullous lichen sclerosus on the back of a 70-year-old woman. On dermoscopy, haemorrhagic and orange homogeneous areas are observed. DermLite Foto; 3Gen, LLC, Dana Point, CA, USA. Original magnification ×10.

Tumoral

The presence of yellow colour has been described very rarely in cutaneous melanomas and, therefore, its presence should not exclude this diagnosis.[47–49] In fact, it is well known the presence of yellow–orange colour in choroidal melanomas, and it is attributed to the pigment lipofuscin, a derived lipid which is an accumulation of lysosomes. This fact is described as one of the features that can help differentiate choroidal melanoma from choroidal naevus.[50] We have observed melanocytic naevi in a 12-year-old male albino patient, under digital dermoscopic follow-up, which showed a yellowish hue, with few structures visible but some vessels, due to the almost complete absence of melanin. On dermoscopy, a naevus of that patient showed yellowish lobular-like structures resembling sebaceous hyperplasia and central dotted vessels (Fig. 3B); the lesion was excised and the pathologic study showed a typical melanocytic compound naevus with no pigment. In a female patient with phototype II we found some melanocytic naevi with peripheral pigmented network with yellowish central globules.

Some lipidized dermatofibromas can have a yellowish homogeneous area that correspond histopathologically to areas of foamy histiocytes surrounded by abundant hyalinized collagen bundles.[20,51,52]

Yellow structures have been described in basal cell carcinoma (BCC), as yellow milia-like cysts and yellow globules.[53] These authors describe yellow globules as roundish or oval shape, variable in size and isolated or aggregated to form yellow lobular-like structures, similar to sebaceous hyperplasia.[53] We have also found those structures, but in addition we have identified several BCC with large yellowish-orange areas which extended partially in the lesion, forming leaf-like areas (Fig. 3C) and globules, and less frequently occupied all the lesion.

Cutaneous lymphangioma circumscriptum presents clinically as clusters of thin-walled, tense vesicles on a localized, well-circumscribed area of skin. Vesicles are most often filled with a clear or serosanguineous fluid giving a yellow or red-purple discoloration. Dermoscopically, they are characterized by yellow or light brown lacunas surrounded by paler septa, and the lesions can be tinged with blood (Fig. 3D).[54] Abortive angiomas can present erythematous yellowish areas in which there are large tortuous reddish vessels.[55]

Apocrine hidrocystomas (AH) are uncommon, benign, cystic lesions of apocrine glands. They are usually found on the head and neck, commonly affecting the cheeks or eyelids. Zaballos *et al.* have observed that the most frequent dermoscopic pattern of AH is a homogeneous area that occupies the whole lesion with arborizing vessels, and its colour varies from skin coloured to pink, yellow or blue in the different lesions.[56] Epidermoid cysts located superficially in the dermis, can also present as whitish or yellowish nodules. This colour can be due to the presence

of keratin concentric with a fibrous capsule. Pilomatrixoma is a tumour that expresses differentiation towards the hair matrix. Individual tumour lobules are composed of a variable admixture of basaloid and ghost cells.[57] Calcification is seen in 80% of lesions,[57] and when it occurs superficially the dermatoscopy of this tumour sometimes shows yellowish lobules.[58]

The presence of keratin in other tumour lesions explains that we can identify the yellow colour in dermoscopy in some seborrhoeic keratosis, actinic keratosis, keratoacanthomas, squamous cell carcinoma, Bowen's disease, inverted follicular keratosis[59] or melanocytic congenital naevus. The presence of yellowish crusts explains the yellow colour dermoscopy in other lesions as some pyogenic granulomas.

Inflammatory or infectious lesions

Alopecia areata (AA) is a non-scarring hair loss disorder. Characteristic dermoscopic findings of AA included black dots, tapering hairs, broken hairs, yellow dots, and clustered short hairs in the areas of hair loss.[60] The yellow dots can be observed in 54–75% of the cases depending on the variety of AA.[60] The pathological features showed that the yellow dots correspond to the dilated infundibula of the vellus-like anagen and telogen follicles that characterize the chronic phase of alopecia areata.[61] Yellow dots, has also been described in androgenetic alopecia, and occasionally in trichotillomania, although far less frequently than in alopecia areata.[60–62]

Skin conditions that can occasionally be orange

Non-inflammatory, non-tumoral

In dermoscopy of scurvy, it has been described the presence of a perifollicular pale orange halo surrounded by a peripheral hemorrhagic halo, in addition to hairs 'in corkscrew' and follicular hyperkeratosis.[63]

Nodular cutaneous amyloidosis and systemic amyloidosis can present waxy or orange papules and nodules.[14] No dermoscopic descriptions have been performed of these entities so far, unlike what is described in macular or lichenoid subtypes.[64]

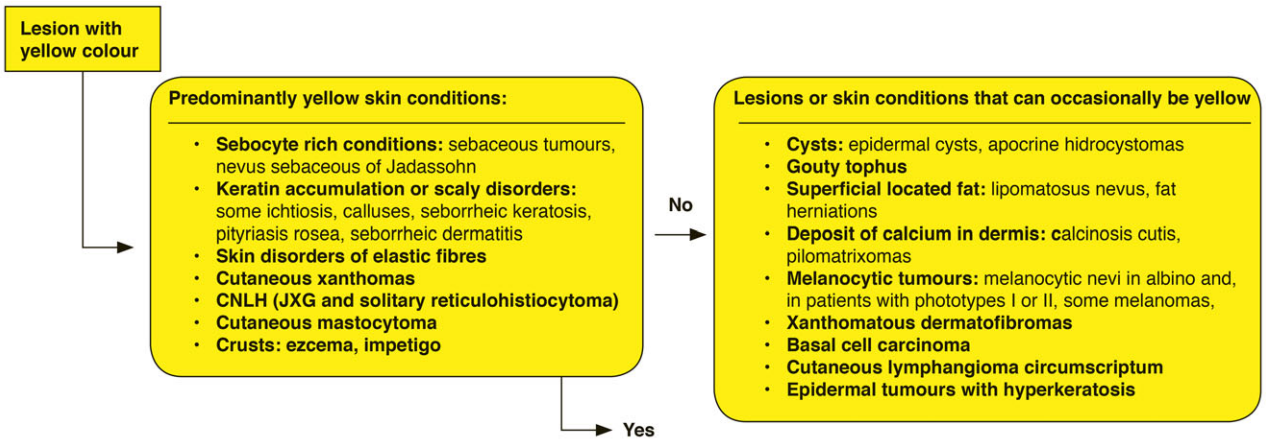

Figure 5 Algorithm of the yellow cutaneous conditions. CNLH, Cutaneous non-Langerhans cell histiocytosis; JXG, Juvenile Xanthogranuloma.

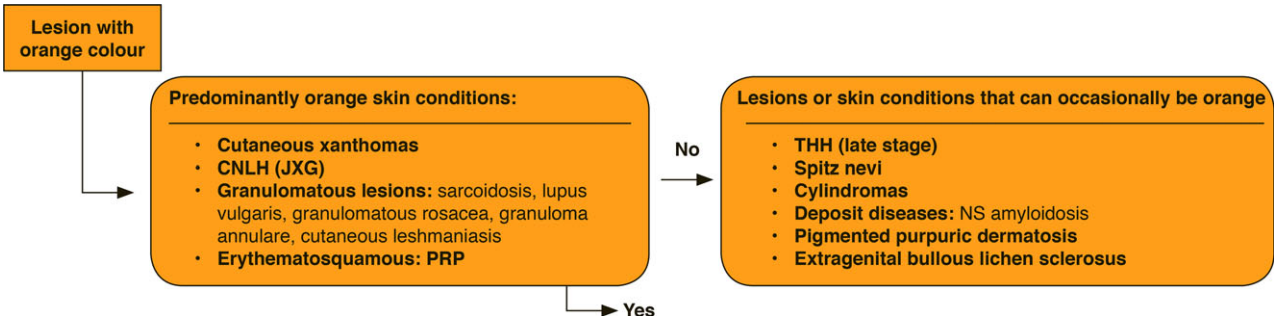

Figure 6 Algorithm of the orange cutaneous conditions. CNLH, Cutaneous non-Langerhans cell histiocytosis; JXG, Juvenile xanthogranuloma; THH, Targetoid haemosiderotic haemangioma; NS Amyloidosis, nodular and systemic amyloidosis.

Table 1 Summary of dermoscopic descriptions of yellow conditions

Predominantly yellow skin conditions
Sebocyte rich conditions:
Sebaceous tumours:
Sebaceous hyperplasia: yellow lobular-like structures, umbilication and 'crown vessels'[26,27]
Sebaceous adenoma and sebaceoma: homogenous yellowish hue and 'crown vessels'[28–30]
Sebaceous carcinoma: homogenous yellowish hue, polymorphous vascular pattern and sometimes ulceration[30]
Naevus sebaceous of Jadassohn: yellowish lobular-like structures and peripheric telangiectasias[28]
Steatocystoma multiplex: DND
Keratin accumulation or scaly disorders:
Ichtiosis: DND
Calluses: homogenous yellowish hue; clavus: translucent core surrounded by a yellow rim.[13]
Pityriasis rosea: yellowish background colour and peripheral whitish scales.[31,32]
Seborrhoeic dermatitis: punctate vessels and yellowish scales.[31,32]
Nummular eczema: scales and yellowish crusts[31,32]
Skin disorders of elastic fibres:
Solar elastosis: papules and plaques with homogeneous yellowish (Fig. 1A) or waxy tone (PO)
Papillary dermal elastolysis: yellow papules coalescing and plaques with linear vessels[11]
Pseudoxanthoma elasticum, mid-dermal elastolysis: DND
Cutaneous xanthomas:
Plane and tuberous xanthomata: DND
Verruciform xanthoma: yellow dots and debris surrounded by a marginal whitish rim.[15]
Cutaneous non-Langerhans cell histiocytosis:
JXG: In early lesions 'setting sun' appearance; in late stages 'clouds' of pale yellow to orange-yellow globules and whitish streaks. Sometimes branched vessels[18–20]
Solitary reticulohistiocytoma:'setting sun' pattern[20–22]
Cutaneous mastocytoma: yellow–orange spot pattern or yellow–orange blot[23,24]
Yellow tattoo: yellow homogeneous colour
Skin conditions that can occasionally be yellow
Cysts:
Epidermal cysts: white, yellow or blue homogeneous area, sometimes telangiectasias (PO)
Apocrine hidrocystomas: pink, yellow or blue homogeneous area with arborizing vessels[56]
Gouty tophus: (a) non-ulcerated: yellow–white homogenous colour (PO); (b) ulcerated: whitish yellowish areas forming irregular striations with reddish areas, and some bright globules[43]
Superficial located fat (lipomatosus naevus, fat herniations): yellow–orange homogeneous hue (Fig. 3A)
Deposit of calcium in dermis:
Calcinosis cutis: yellow–white homogeneous colour[44]
Pilomatrixomas: yellow–white homogeneous areas inside the lesion[58]
Melanocytic tumours:
Melanocytic naevus
In albino patient: yellowish lobular-like structures and central dotted vessels (PO)
Patients with phototypes I or II: melanocytic naevi with peripheral pigmented network with yellowish central globules (PO)
Some melanomas: structureless yellow to pink areas and atypical vessels[47–49]
Xanthomatous dermatofibromas: yellowish homogeneous area in the tumour[20,51,52]
Basal cell carcinoma: yellow milia-like cysts and yellow globules.[53] Yellowish-orange leaf-like areas (Fig. 3C) and less frequently yellowish-orange hue occupied all the lesion (PO)
Keratin in tumours: yellow homogeneous areas in the tumour[4,5]
Cutaneous lymphangioma circumscriptum: yellowish light brown lacunas with paler septa, and the lesions can be tinged with blood[54]

JXG, Juvenile xanthogranuloma; DND, dermoscopy non-described; PO, personal observation.

Tumoral

Targetoid haemosiderotic haemangioma, in its latest stages, can present as a slightly raised dermal lesion with a yellowish or brownish coloration around a central vascular lesion (Fig. 4A).[65] Cylindroma is one of the most common benign tumours of the sweat glands. On dermoscopy, it shows areas of background pink and sometimes orange coloration with arborizing telangiectasia (Fig. 4B).[66] Cutaneous Rosai-Dorfman disease (CRDD) is a very rare benign histiocytic proliferative disorder of unknown aetiology. Dermoscopy of CRDD sometimes shows features similar to those described for JXG, as a 'setting sun' pattern, clouds of pale yellow globules and different types of vascular patterns.[67] An ulcerated atypical Spitz naevus has been reported demonstrating a yellow to light orange colour under dermoscopy due to serous crusting.[68] However, we have observed an orange background in a Spitz naevus without ulceration and crusting (Fig. 4C).

Table 2 Summary of dermoscopic descriptions of orange conditions

Predominantly orange skin conditions
Cutaneous xanthomas: (DND)
JXG: oval lesion yellowish–orange hue, sometimes with branched telangiectasia[33]
Granulomatous lesions:
Sarcoidosis: orange-yellowish areas and linear branching vessels[31]
Lupus vulgaris: orange-yellowish areas and linear branching vessels[31,35]
Granulomatous rosacea: orange-yellowish areas, pattern of vascular polygons[31]
Necrobiosis lipoidica: linear arborizing vessels on a yellowish-orange background[36–38]
Granuloma annulare: peripheral structureless orange-reddish areas, unfocussed small vessels[36]
Cutaneous leishmaniasis: erythema-orange background, 'yellow tears', hyperkeratosis, ulcerations, 'white starburst-like pattern' and a variable vascular pattern[39]
PRP: oval or round orange areas surrounded by vessels of mixed morphology[41,42]
Skin conditions that can occasionally be orange
THH, late stage: yellowish or brownish coloration around a central vascular lesion[65]
Spitz naevi: orange coloration with white streaks and dotted vessels (Fig. 4C)
Cylindromas: background pink or orange with arborizing telangiectasia[66]
Nodular and systemic amyloidosis: DND
Pigmented purpuric dermatosis: glomerular vessels in a background yellowish-orange with scaly surface[70]
Extragenital bullous lichen sclerosus: haemorrhagic and orange homogeneous areas[72]

THH, Targetoid haemosiderotic haemangioma; JXG, Juvenile xanthogranuloma; PRP, pytiriasis rubra pilaris; DND, dermoscopy non-described.

Inflammatory

The term pigmented purpuric dermatosis (PPD) is used for a group of dermatoses that are clinically characterized by an eruption of pinpoint purpuric lesions with yellow, orange, red and/or brown, pigmented areas.[69,70]

Haemorrhagic blisters in the setting of genital or extragenital lichen sclerosus have been described and it is known as bullous lichen sclerosus.[71] In bullous areas we have observed haemorrhagic and orange homogeneous areas (Fig. 4D).[72]

We have elaborate two simple algorithms one for the yellow colour and another for the orange one (see Figs 5 and 6). The dermoscopic findings of these entities and their references are shown in Tables 1 and 2.

Discussion

In this article we have reviewed the lesions in which the yellow and orange colours can be observed, not only the ones where these colours are clue for the diagnosis, but also a range of skin diseases, in which these colours may appear and were not well reflected in the literature.

The origin of these colours is not always well established. It was well known so far that the presence of lipid-laden macrophages explain the yellow colour of xanthomas, or some endogenous pigments such as bilirubin or exogenous as quinacrine can stain skin yellow and granulomatous lesions can be observed orange, however, it is difficult to explain the colour of other lesions. Indeed, there are other structures that can influence the skin colour, such as keratin, fat located very superficial in dermis, the arrangement of the collagen fibres, the amount, structure, and distribution of elastic fibres and other substances in the extracellular matrix, even other pigments, not always considered in the skin colour-like lipofucsin. We have also seen how the absence of melanin, as in the case of the melanocytic naevus in the albino patient, allowed better visualization of the underlying structures and showed unexpected forms, which remembered sebaceous hyperplasia. On the other hand, we have observed, on dermoscopy, tumours like BCC or cylindromas show yellowish-orange coloration with an unknown structural origin.

From the practical point of view, the presence of yellow or orange colours should make us think about, first of all, predominantly yellow or orange skin conditions, but if there are not criteria for those diagnostics, then we have to consider those lesions or skin conditions that can occasionally be yellow or orange. Moreover, we are aware of the difficulty of distinguishing sometimes between yellow and orange, and some lesions, such as JXG may be either yellow or orange, so we treated these two colours together. We think the two diagnostic algorithms illustrate the different entities that can present any of these colours and they can help us to clarify the diagnostic process. We like to highlight that it is important to know that these colours may appear in certain lesions and their presence should not exclude some determined diagnostics, for example, a melanoma.

Finally, we hope this manuscript may contribute from now on to give greater prominence to these two colours in the dermoscopic diagnosis.

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