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ORIGINAL ARTICLE

Dermoscopic features and differential diagnosis of sebaceous carcinoma

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ABSTRACT

Sebaceous carcinoma is a rare malignant skin neoplasm arising from sebaceous glands. Its clinical diagnosis is difficult and reports of dermoscopic findings have been limited. This study aims to analyze its dermoscopic features and differential diagnosis in dermoscopic examination. The study included patients diagnosed with histologically proven sebaceous carcinomas as well as diagnosed cases of sebaceous hyperplasia, sebaceoma, squamous cell carcinoma and basal cell carcinoma for comparison of dermoscopic findings. The dermoscopic criterion of presence of sebaceous carcinoma was scored only if the two evaluators reached a consensus. Fifteen cases of histologically diagnosed sebaceous carcinoma were included in our study. All cases were extraocular sebaceous carcinoma. A total of 60 (15 basal cell carcinomas, 15 squamous cell carcinomas, 15 sebaceous hyperplasias and 15 sebaceomas) cases were collected for comparing dermoscopic features with sebaceous carcinoma. In dermoscopic analysis of sebaceous carcinoma, the majority of tumors (66.67%) presented polymorphic vessel pattern. Other features included whitish-pink areas (80%), yellowish structures (73.33%) and yellowish structureless areas (60%). Yellowish structures in sebaceous carcinomas are the main dermoscopic findings to differentiate squamous cell and basal cell carcinomas ($P < 0.001$), whereas purplish globules, shiny white blotches and strands and whitish-pink area distinguish sebaceous carcinomas from other sebaceous tumors ($P < 0.05$).

Key words: dermoscopy, pathology, sebaceous, sebaceous gland neoplasms, skin neoplasms.

INTRODUCTION

Sebaceous carcinoma (SC) is an aggressive malignant cutaneous neoplasm arising from sebaceous glands. It is frequently located in the head and neck region, especially in the periocular area.[1] SC can be divided into two categories: ocular and extraocular types. Ocular SC originates from the Meibomian and Zeiss glands of the eyelids, whereas extraocular SC originates from cutaneous sebaceous glands. SC may occur sporadically, or it can be associated with Muir–Torre syndrome, an autosomal dominant disorder of hereditary nonpolyposis colorectal cancer syndrome, which is often associated with malignant intestinal and urinary tract neoplasms as well as cutaneous tumors, such as keratoacanthomas and sebaceous neoplasms.[2] SC is usually a slowly growing yellowish to erythematous nodule or plaque. Its clinical diagnosis is often difficult because it may mimic basal cell carcinoma (BCC), squamous cell carcinoma (SCC) or other sebaceous tumors. Dermoscopy is a non-invasive technique that has been used to assist in the diagnosis of pigmented and non-pigmented skin tumors for decades. In a review of previous published work, case reports describing the dermoscopic findings of SC were limited. Therefore, this study aimed to analyze its dermoscopic features and differential diagnosis in dermoscopic examination.

METHODS

Study design

The institutional review board at Chang Gung Memorial Hospital, Taiwan, approved this study. All patients with histologically diagnosed SC with dermoscopic examinations from January 2011 to December 2018 at Chang Gung Memorial Hospital, Taiwan, were retrospectively investigated. Those with poor dermoscopic image quality were excluded. Medical records of enrolled patients were reviewed to analyze their demographic information, clinical impression, treatment and therapeutic outcome.

The present study also collected diagnosed cases of sebaceous hyperplasia and sebaceoma with dermoscopic examination from January 2011 to December 2018 for comparison of dermoscopic features of different sebaceous tumors. Additionally, we also compare the dermoscopic findings of SC with

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other non-melanoma skin cancers, including SCC and BCC. Because the number of cases of diagnosed SCC and BCC was far more than SC, we matched these cases in the same period by age, sex, and size and location of the tumors at a ratio of 1:1.

Dermoscopic analysis

All dermoscopic images were obtained using a HEINE Delta 20 T Dermatoscope (HEINE Optotechnik, Herrsching, Germany) coupled with a Nikon digital camera D90 (Nikon, Tokyo, Japan). Images were obtained using contact polarized mode with ultrasound gel for immersion. Digital images were reviewed by two of the authors (C.-Y. C. and H.-J. S.) without knowledge of histopathological diagnosis.

On dermoscopic analysis, vascular morphology, vascular arrangement, vascular homogeneity and other associated dermoscopic features were evaluated. The vascular morphology and arrangement were defined according to previous published works. If one vessel type dominated others, the vascular homogeneity was called monomorphic, whereas if multiple vessel types were present without any predominant type, it was defined as polymorphic pattern. Other dermoscopic criteria were also evaluated based on available published works.[3] In this study, the yellowish structures were subdivided into yellowish structureless areas and yellowish lobules/globules for more specific definition. The dermoscopic criterion was scored as present only if the two evaluators reached a consensus.

Histopathological analysis

To analyze the dermoscopic–histopathological correlation, each case was also reviewed by two of our dermatopathologist authors (C.-Y. C. and T.-T. K.). The histological differentiation was based on Font's classification.[1] In addition, the predominant cell growth pattern and the presence of intraepithelial spread, intratumoral hemorrhage and comedonecrosis were also analyzed.

Statistical analysis

In the present study, SPSS version 20 (SPSS, Chicago, IL, USA) was used for all statistical analyses. The Mann–Whitney *U*-test was used to compare age of patients and size of tumors in each group. Fisher's exact test was used for the comparison of dermoscopic features in each group of patients. All given *P*-values are two-tailed, and $P < 0.05$ was considered statistically significant.

RESULTS

Patient demographics and clinical characteristics

A total of 15 Taiwanese cases of histologically diagnosed SC were included in our study: nine (60%) men and six (40%) women, with a mean age of 73.13 ± 15.29 years (range, 43–103). Most lesions were located in the head and neck area, especially cheeks (four cases, 26.67%). All cases were extraocular SC. The demographic data are shown in Tables 1 and 2.

Clinically, SC presented as erythematous-to-yellowish nodules or plaques. The mean size was 11.87 ± 6.48 mm (range, 5–25). The clinical impressions of the cases were mainly SCC ($n = 6$, 40%) and BCC (three patients, 20%). Only one patient was clinically diagnosed with potential SC before biopsy. The majority of patients received wide local excision ($n = 11$, 73.33%).

Histopathological findings

Histopathological analysis is shown in Table 3 and Figure 1(f–j). The majority of the patients had poorly differentiated type SC ($n = 10$, 66.67%) based on Font's classification. Immunohistochemical study with adipophilin, epithelial membrane antigen and CAM 5.2 stains was performed in five cases to confirm the diagnosis of poorly differentiated type SC. Moderately differentiated and well-differentiated types were found in four (26.67%) and one patient (6.67%), respectively. The majority of infiltrative cell growth types consisted of basaloid cells ($n = 8$, 53.33%). Comedonecrosis was seen in 11 cases (73.33%), whereas six cases (40%) displayed intratumoral hemorrhage. Intraepithelial involvement was found in six patients: five with carcinoma *in situ* and one with pagetoid spread.

Dermoscopic features of SC

The dermoscopic features of SC are summarized in Table 4 and Figure 1(a–e). The majority of tumors (66.67%) displayed a polymorphic vessel pattern, whereas others displayed a monomorphic vessel pattern. Non-specific (46.67%) was the most common vascular arrangement, followed by radial (40%). Linear-irregular (73.33%) was the most common vessel type, followed by arborizing (46.67%), hairpin (26.67%), milky red (26.67%), serpentine (13.33%), dotted (6.67%) and coiled (6.67%). Other common features included whitish-pink areas (80%), yellowish structures (73.33%), ulceration (46.67%), shiny white blotches and strands (46.67%), white structureless area (33.33%) and purplish globules (33.33%). Among those with yellow structures, nine patients presented with yellowish structureless areas, whereas the other two patients presented with yellow lobules/globules.

Dermoscopic differential diagnosis of SC from other tumors

A total of 60 (15 BCC, 15 SCC, 15 sebaceous hyperplasias and 15 sebaceomas) Taiwanese cases were collected for comparing dermoscopic features with SC. The demographic data is summarized in Table 2. In comparison of SC with other sebaceous tumors, purplish globules ($P = 0.042$), shiny white blotches and strands ($P < 0.05$) and whitish-pink area ($P < 0.05$) were significantly associated with SC. Additionally, polymorphous vascular pattern ($P < 0.001$), yellowish structureless area ($P < 0.001$), white structureless areas ($P = 0.042$) and ulceration ($P = 0.035$) were significantly more prevalent in SC, whereas crown ($P < 0.001$) and yellowish globules ($P < 0.001$) were significantly related to sebaceous hyperplasia (Table 4).

In comparison with SC and BCC, linear-irregular vessels ($P = 0.027$), white structureless areas ($P = 0.042$), whitish-pink

Table 1. Demographics and clinical data of cases of sebaceous carcinoma

Case	Age	Sex	Location	Duration	Clinical manifestation	Size (mm)	Clinical diagnosis	Treatment
1	61	M	Thigh	2 years	Erythematous nodule	14	BCC	WLE
2	73	M	Chest	3 months	Erythematous nodule	25	SCC	WLE
3	80	F	Left temple	10 years	Ulcerative erythematous nodule	12	SC	MMS
4	77	M	Nose	3 years	Erythematous papule	6	BCC	MMS
5	43	F	Scalp	3 years	Yellowish papule	6	EIC	WLE
6	59	F	Scalp	2 years	Erythematous nodule	15	EIC	WLE
7	77	M	Forehead	2 months	Erythematous nodule	15	BCC	WLE
8	103	F	Cheek	NA	Erythematous plaque	10	SCC	RT
9	94	M	Forehead	NA	Erythematous nodule	5	SCC	WLE
10	65	M	Cheek	6 months	Erythematous plaque	7	SCC	MMS
11	80	F	Neck	NA	Erythematous nodule	15	SCC	WLE
12	82	M	Cheek	NA	Erythematous nodule	10	SCC	WLE
13	82	M	Cheek	NA	Erythematous papule	5	Soft fibroma	WLE
14	64	M	Temple	6 months	Erythematous nodule	8	Sebaceoma	WLE
15	57	F	Buttock	2 years	Erythematous nodule	25	Amelanotic melanoma	WLE

BCC, basal cell carcinoma; EIC, epidermal inclusion cyst; F, female; M, male; MMS, Mohs microscopic surgery; NA, not available; SC, sebaceous carcinoma; SCC, squamous cell carcinoma; RT, radiotherapy; WLE, wide local excision.

Table 2. Demographic data of all 75 cases

	Sebaceous carcinoma (n = 15)	Basal cell carcinoma (n = 15)	Squamous cell carcinoma (n = 15)	Sebaceous hyperplasia (n = 15)	Sebaceoma (n = 15)
Age	73.13 ± 15.29	73.93 ± 15.12	77.0 ± 10.3	60.30 ± 11.10	52.47 ± 17.87
P		0.888	0.428	0.015	0.002
Sex					
M	9 (60.0%)	9 (60.0%)	11 (78.57%)	13 (14.3%)	7 (46.67%)
F	6 (40.0%)	6 (40.0%)	4 (21.4%)	2 (85.7%)	8 (52.33%)
P		1.000	0.700	0.215	0.715
Size	11.87 ± 6.48	9.73 ± 3.22	11.33 ± 7.02	4.47 ± 1.49	5.53 ± 1.30
P		0.436	0.412	<0.001	0.001
Location					
Forehead	2 (13.33%)	2 (13.33%)	2 (13.33%)	2 (13.33%)	3 (20.0%)
Temple	2 (13.33%)	1 (6.67%)	2 (13.33%)	6 (40.0%)	0 (0%)
Cheek	4 (26.67%)	5 (33.33%)	4 (26.67%)	4 (20.0%)	1 (6.67%)
Nose	1 (6.67%)	1 (6.67%)	1 (6.67%)	0 (0%)	5 (33.3%)
Chin	0 (0%)	0 (0%)	0 (0%)	1 (6.67%)	1 (6.67%)
Scalp	2 (13.33%)	2 (13.33%)	2 (13.33%)	0 (0%)	3 (20.0%)
Neck	1 (6.67%)	1 (6.67%)	1 (6.67%)	2 (13.33%)	2 (6.67%)
Other	3 (20.0%)	3 (20.0%)	3 (20.0%)	0 (0%)	0 (0%)
P		0.982	0.991	<0.001	<0.001

F, female; M, male.

area (P = 0.025), yellowish structure (P < 0.001) and yellowish structureless areas (P = 0.002) were significantly more common among SC. In contrast, spoke wheel areas (P = 0.017), leaf-like areas (P = 0.006), blue-gray ovoid nest (P < 0.001), blue-gray dots/nests (P < 0.001) were significantly related to BCC. Only yellowish structures (P < 0.001) and yellowish structureless areas (P < 0.001) were significantly associated with SC rather than SCC.

DISCUSSION

Sebaceous carcinoma is a rare cutaneous malignancy that represents approximately 0.2–4.6% of all skin cancers.[4] A previous study demonstrated that the median age at diagnosis was 73 years, and slight male predominance (54%) is observed.[5] The head and neck region is the most common tumor location, and 74.2% of tumors are extraocular.[6] The median age at diagnosis, male predominance and predilection for the head and neck area in our series were compatible with that of the previously described data.

Histopathologically, SC are characteristic of unencapsulated, dermally based tumors composed of sebaceous and undifferentiated cells. Previous studies reported that approximately 11–43.8% of extraocular SC were of poorly differentiated type.[7,8] The majority of the cases in this study were classified as poorly differentiated SC (66.67%), which was higher than that of previous studies.

Table 3. Pathological features of extraocular sebaceous carcinoma

Pathologic findings	No. of cases	%
Level of differentiation		
Well-differentiated	1	6.67
Moderately differentiated	4	26.67
Poorly differentiated	10	66.67
Infiltrative cell type		
Basaloid	8	53.33
Squamoid	7	46.67
Predominant pattern of intraepithelial spread		
Carcinoma *in situ*	5	33.33
Pagetoid spreading pattern	1	6.67
Not present	9	60
Comedonecrosis	11	73.33
Intratumor hemorrhage	6	40

The most common infiltrative cell type in our series was basaloid type (53.33%), whereas others were squamoid type (46.67%). This result is contrary to the results explained by Candelario *et al.*[7] Basaloid type cells correspond to the outer germinal cells of the secretory alveoli and contain scant cytoplasm and large vesicular hyperchromatic nuclei, whereas those of squamoid type have abundant eosinophilic cytoplasm with occasional formation of keratin pearls. Neither adenoid nor spindle cell type has been observed in our series.

Intraepithelial spread of SC, in a pagetoid or carcinoma *in situ* pattern, was more common in ocular SC than in extraocular SC.[9] Approximately 40% of our cases displayed intraepithelial spread, which is higher than other reported data on extraocular SC.[7] In several patients with carcinoma *in situ*, intraepithelial invasion developed in poorly differentiated SC (n = 4, 80%), whereas one moderately differentiated SC contained pagetoid spread. Several cases exhibited comedonecrosis in tumor lobules; this finding was caused by foci of exaggerated holocrine secretion instead of true necrosis.[8]

In dermoscopic analysis, the polymorphic vessel pattern was found to be more common than the monomorphic vessel pattern. Those with a monomorphic vessel pattern were mainly composed of linear-irregular and arborizing vessel types. Vasculature homogeneity was not associated with the level of differentiation. This result is in contrast with that of previous studies in which almost all reported cases of SC exhibited polymorphic vessel pattern.[3,10] The polymorphic vessel pattern in dermoscopy often indicates as malignant tumor, such as amelanotic melanoma or porocarcinoma.[11,12] Physicians should be alerted by this finding, and biopsy is necessary in making a diagnosis.

The present study showed that linear-irregular vessels were the most common vessel type in SC, followed by arborizing and hairpin vessels. The linear-irregular and hairpin vessels may also be observed in keratoacanthoma, SCC or other epithelial malignant neoplasms.[13] Arborizing vessels are one of the characteristic dermoscopic findings of BCC. Notably, this study also demonstrated milky red globules and serpentine vessels in SC, which has not been described before. Milky red globules indicate increased angiogenesis, which has also been described in amelanotic melanoma and Merkel cell carcinoma.[14,15]

With regard to vascular arrangement, the majority of our cases displayed a non-specific arrangement (n = 7, 46.67%), followed by radial arrangement (n = 6, 40%). Of those cases, 85.71% were poorly differentiated. In addition, 85.71% displayed intraepithelial spread histopathologically. Approximately 50% of tumors with radial vascular arrangement on dermoscopy were poorly differentiated on histology. Basaloid-type infiltrative cell was observed in five (83.33%) of six patients and only one (16.67%) displayed intraepithelial spread.

This study demonstrated that yellowish structures were observed in only 73.33% of the cases. The majority of the cases (n = 9, 60%) in this study revealed yellowish structureless areas, whereas yellowish lobules/globules were seen in two cases. Those with yellowish lobules/globules were well- and moderately differentiated SC, respectively. The dermoscopic finding is related to this sebaceous component of SC. The yellowish lobules/globules were round to ovoid-shaped yellowish structures in dermoscopy, which indicated sebaceous component in well-structured tumor lobules. On the other hand, the yellowish structureless areas were irregularly

Figure 1. Clinical (inserts) and dermoscopic images in representative cases along with correlated histopathological pictures. The histopathological pictures with high magnification are shown as inserts in (f–j). (a) The dermoscopy of patient 4 revealed white-pink area (white arrowhead), shiny white blotches and strands (black arrowhead) and arborizing vessels (white arrow). (b) The dermoscopy of patient 10 revealed white-pink area (white arrowhead), shiny white blotches and strands (black arrowhead), yellowish structureless area (black asterisk), linear-irregular vessels (black dotted arrow) and arborizing vessels (white arrow). (c) The dermoscopy of patient 15 revealed white-pink area (white arrowhead), shiny white blotches and strands (black arrowhead), yellowish structureless (black asterisk), linear-irregular vessels (black dotted arrow), coiled vessels (white dotted vessels) and arborizing vessels (white arrow). (d) Histology of patient 9 revealed well-differentiated sebaceous carcinoma. (e) Histology of patient 14 revealed moderately differentiated sebaceous carcinoma, and massive intratumoral bleeding was also noted. (f) The dermoscopy of patient 9 revealed white-pink area (white arrowhead), yellowish lobule/globule (black asterisk) and arborizing vessels (white arrow). (g) The dermoscopy of patient 14 revealed white-pink area (white arrowhead), shiny white blotches and strands (black arrowhead), yellowish lobule/globule (black asterisk), purplish globule (white asterisk), hairpin vessels (black arrow), milky red vessel type (black dotted arrow) and arborizing vessels (white arrow). (h) Histology of patient 4 revealed poorly-differentiated sebaceous carcinoma with scant sebaceous differentiation. (i) Histology of patient 10 revealed poorly differentiated sebaceous carcinoma with mainly basaloid growth pattern. (j) Histology of patient 15 revealed poorly differentiated sebaceous carcinoma with squamoid growth pattern (hematoxylin–eosin, original magnifications: ×100; inserts, ×400).

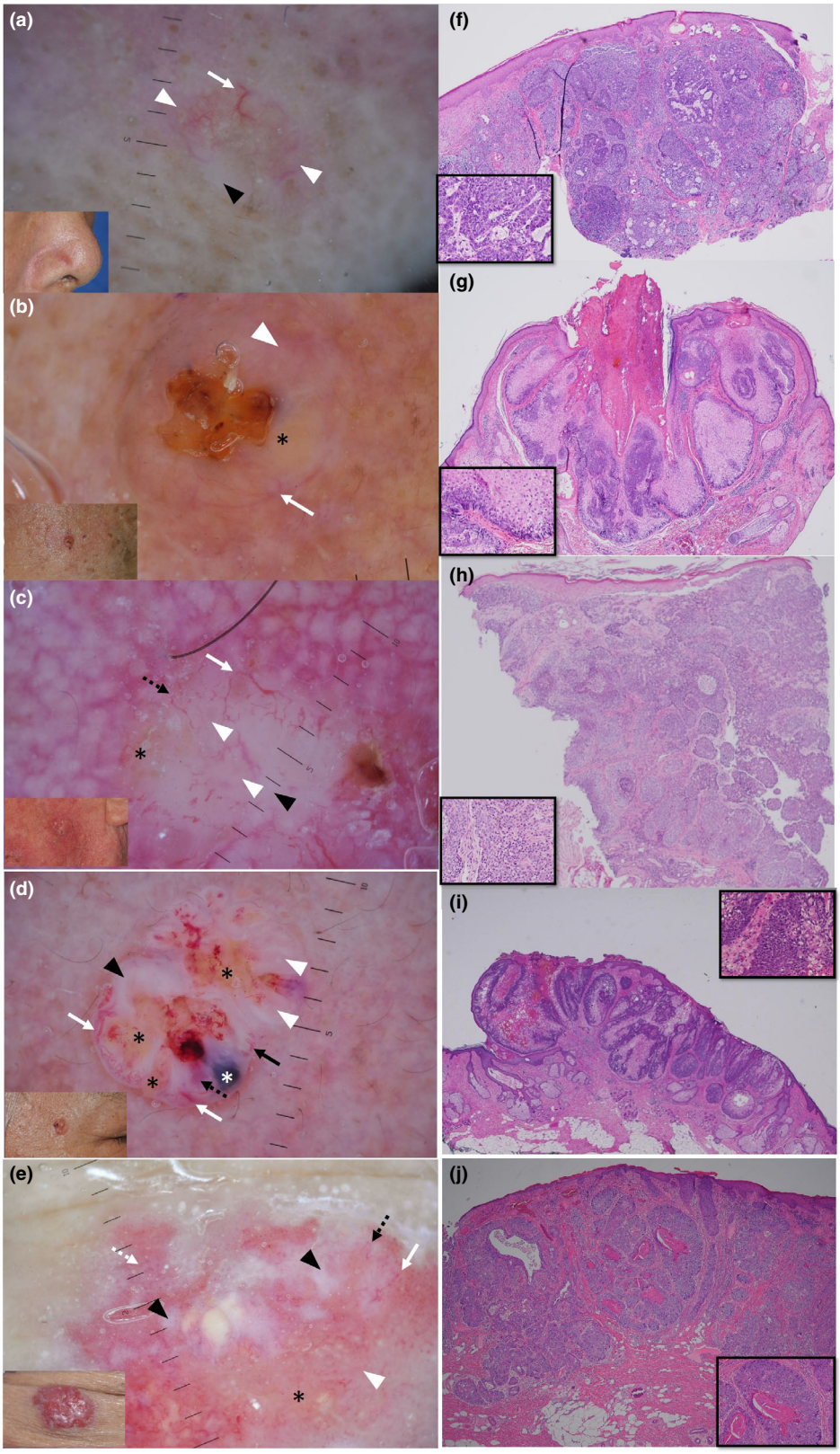

Table 4. Dermoscopic differential diagnosis of sebaceous carcinoma from other tumors

	Sebaceous carcinoma (n = 15)	Basal cell carcinoma (n = 15)	P	Squamous cell carcinoma (n = 15)	P	Sebaceous hyperplasia (n = 15)	P	Sebaceoma (n = 15)	P
Vascular homogeneity									
Monomorphic	5	10	0.073	3	1.000	15	<0.001*	10	0.143
Polymorphic	10	4		12		0		5	
No vessel	0	1		0		0		0	
Vascular arrangement									
Radial	6	3	NA	3	NA	12	NA	6	NA
Branched	0	4		0		0		0	
Centered	1	0		0		0		0	
Clustered	1	0		1		0		1	
No specific arrangement	7	7		11		3		8	
Vascular morphology									
Linear-irregular vessels	11	4	0.027*	14	0.330	1	<0.001*	9	0.700
Arborizing vessels	7	13	0.050	7	1.000	3	0.245	6	1.000
Hairpin vessels	4	0	0.100	6	0.700	0	0.100	3	1.000
Dotted vessels	1	0	1.000	2	1.000	0	1.000	2	1.000
Comma-like vessels	0	0	N/A	0	N/A	0	N/A	1	1.000
Corkscrew	2	0	0.483	5	0.390	0	0.483	1	1.000
Coiled	1	0	1.000	2	1.000	0	1.000	1	1.000
Milky red	4	1	0.330	1	0.330	0	0.100	0	0.100
Crown	0	0	N/A	0	N/A	11	<0.001*	0	N/A
Other criteria									
Ulceration	7	5	0.710	11	0.264	1	0.035*	4	0.450
Crust	9	4	0.139	9	1.000	4	0.139	4	0.139
Scale	2	0	0.483	5	0.390	0	0.483	4	0.651
Purplish globules	5	1	0.169	3	0.682	0	0.042*	0	0.042*
White structureless areas	5	0	<0.042*	11	0.066	0	<0.042*	4	1.000
Shiny white blotches and strands	7	11	0.264	9	0.715	0	0.006*	1	0.035*
Milia-like cyst	4	2	0.651	2	P = 0.430	0	0.100	4	1.000
Perifollicular white halo	1	0	1.000	4	0.330	0	1.000	1	1.000
Whitish-pink area	12	5	0.025*	6	0.060	1	<0.001*	5	0.025*
Yellowish structure	11	1	<0.001*	0	<0.001*	15	0.100	15	0.100
Yellowish structureless area	10	0	0.002*	0	<0.001*	0	<0.001*	9	1.000
Yellowish lobules/globules	2	1	0.483	0	0.483	15	<0.001*	7	0.109
Spoke wheel areas	0	6	0.017*	0	N/A	0	N/A	0	N/A
Leaf-like areas	0	7	0.006*	0	N/A	0	N/A	0	N/A
Blue gray ovoid nest	0	14	<0.001*	0	N/A	0	N/A	0	N/A
Blue gray dots/nests	0	12	<0.001*	0	N/A	0	N/A	0	N/A

*P < 0.05. NA, not available.

shaped yellowish areas, which indicated a sebaceous component in poorly marginated or infiltrative tumor nests. This result is quite different from those of previous studies as all previously reported cases contained yellowish structures. Notably, all of those without yellowish structures on dermoscopy were poorly differentiated. This phenomenon may be due to the low degree of sebaceous differentiation.

The whitish-pink areas were observed in 80% of cases. A previous study demonstrated that this dermoscopic feature correlates with telangiectasia, inflammatory cell infiltration and fibrosis in the interstitial tissue histologically.[3] However, we found that the whitish-pink area was the main dermoscopic feature in those cases without the yellowish structures. Therefore, we propose that the whitish-pink areas may also represent tumor lobules with little or no sebaceous differentiation. Notably, some cases displayed white structureless areas on dermoscopy, and we proposed that this finding may be related to the fibrotic or tumor lobules with a relatively lower degree of telangiectasia and inflammatory cell infiltration. Shiny white blotches and strands were observed in 46.67% of cases in this study. This finding was related to the fibrotic stroma within the tumor. According to our previous study, purplish globules on dermoscopy are associated with intratumoral hemorrhage.[16] In the present study, all cases with purplish globules on dermoscopy displayed intratumoral hemorrhage histopathologically, while no obvious intratumoral hemorrhage could be observed in those without purplish globules on dermoscopy.

The present study also demonstrated the use of dermoscopy in the differential diagnosis of SC from other sebaceous tumors and non-melanoma skin cancers. The yellowish structures are common dermoscopic features in sebaceous tumors, including sebaceous hyperplasia, sebaceoma and SC. According to previous studies, dermoscopic features of sebaceous hyperplasia include a crown of vessels with a radial arrangement surrounding a white-yellowish polylobular center, whereas the dermoscopy of sebaceoma reveals homogeneous, translucent yellow-pinkish areas, with peripheral arborizing vessels and sometimes central ulceration.[14,17] The present study showed that purplish globules, shiny white blotches and strands, and whitish-pink area were significantly associated with SC. The result indicated that intratumoral hemorrhage and stromal fibrosis were more common in cases of SC histopathologically. Additionally, we also found that polymorphic vessels were more common in SC than in sebaceous hyperplasia while almost all cases of sebaceous hyperplasia displayed monomorphic crown vessels. As for yellowish structures, the majority of cases of SC displayed yellowish structureless areas, whereas all cases of sebaceous hyperplasia displayed yellowish lobules/globules. In addition, yellowish structures on dermoscopy have also been described in tumors with xanthomatous deposits, such as xanthogranuloma, xanthomatous dermatofibroma and reticulohistiocytoma.[18] We did not include these cases for differential diagnosis in the present study because of the limited cases in our database. The yellowish structures in these neoplasms were described mainly as solitary round structures instead of lobule/globules or structureless areas, as in the SC in this study. Additionally, the white-pink areas and polymorphic vessel pattern in SC may be possible clues for differential diagnosis.

The present study demonstrated that SCC and BCC were the two most common clinical impressions in our cases, and comparison of dermoscopic features of SC, SCC and BCC was performed. According to previous published work, the dermoscopic features of SCC include hairpin vessels, linear-irregular vessels, targetoid hair follicles, white structureless areas, a central mass of keratin and ulceration.[19] The present study showed that there was no significant difference of these dermoscopic findings between SC and SCC. Only yellowish structures and yellowish structureless areas achieved significance for differentiating SC from SCC. The dermoscopic criteria of BCC include ulceration, maple leaf-like areas, large blue-gray ovoid nests, multiple blue-gray globules, spoke wheel areas and arborizing vessels; moreover, yellowish structures and shiny white blotches and strands have also been described. The present study showed that there was no significant difference of ulceration, arborizing vessels and shiny white blotches and strands between SC and BCC, whereas linear-irregular vessels, white structureless areas, whitish-pink area, yellowish structure and yellowish structureless areas were significantly associated with SC. The yellowish structures in BCC comprise milia-like cysts and yellow lobular-like structures, whereas yellowish structures in SC are mainly structureless areas.[20] Additionally, our study also showed that spoke wheel areas, leaf-like areas, blue-gray ovoid nests and blue-gray dots/nests were clues to differentiate pigmented BCC from SC.

The main limitation of this study is the small number of patients because of the rarity of the disease. Additionally, the present study only included cases of extraocular SC, and further study is warranted to compare the dermoscopic findings of ocular and extraocular SC.

In summary, this study demonstrated the dermoscopic features of SC. The polymorphic vessel pattern, yellowish structures and whitish-pink areas were common features of SC. Yellowish structures are major findings in differentiating SC from SCC and BCC. Purplish globules, shiny white blotches and strands, and whitish-pink area in SC are important clues to distinguish them from other sebaceous tumors.

CONFLICT OF INTEREST: None declared.

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