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Dermoscopic Assessment of the Success of Cryosurgery in the Treatment of Basal Cell Carcinoma

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Abstract

Background

Dermoscopy is noninvasive optical surface microscopy, useful for diagnostic purposes in a number of skin conditions including basal cell carcinoma (BCC). Expert observers provide an accurate (sensitivity: 97%) and reliable dermoscopic diagnosis of BCC.

Objective

The aim of the study was to illustrate the effect of cryosurgery on the dermoscopic findings in nodular basal cell carcinoma lesions.

Patients and methods

Ten patients complaining of nodular (n)BCC and treated by cryosurgery were included.

Results and Conclusion

Disappearance of dermoscopic features was predictive of successful treatment.

Dermoscopy is an effective method for follow-up of noninvasive treatment modalities in cases of nBCC.

Introduction

Dermoscopy is noninvasive optical surface microscopy, useful for diagnostic purposes in a number of skin conditions including basal cell carcinoma (BCC) [1].

The classical dermoscopic findings for the diagnosis of BCC include lack of a pigment network and the presence of at least one of the following criteria: ulcerations, maple-leaf like structures, blue-grey globules, blue-ovoid nests, arborizing vessels and spoke-wheel structures [2]. (**Fig 1**)



Fig 1: Pigmented basal cell carcinoma exhibiting arborizing blood vessels, blue-grey globules and large blue-grey nests [2]

Expert observers provide an accurate (sensitivity: 97%) and reliable dermoscopic diagnosis of BCC. Arborizing telangiectasia, leaf-like areas, and large blue/gray ovoid nests represented reliable and robust diagnostic parameters [3].

Treatment modalities for BCC include: standard excision, curettage with or without electrodesiccation, Mohs micrographic surgery, radiation therapy, cryosurgery, photodynamic therapy, laser ablation and medical treatment in the form of 5-fluorouracil or imiquimod creams, interferon- α -2b intralesional injections and oral vismodegib in addition to various combined therapies. Nonablative therapeutic modalities are licensed for the management of superficial basal cell carcinoma (sBCC) and lately have become very popular among dermatologists [4].

Recurrence rates for primary BCC vary with treatment modality. The 5-year recurrence rate for Cryotherapy may be as low as 7.5%, if lesions are chosen judiciously [5]. Mallon and Dawber studied the virtues of one versus two freeze-thaw cycles for treatment of BCC and found that the double freeze-thaw cycle on the face achieved 95.3% cure rate, whereas the single cycle had 79.4% cure rate [6].

As a result of the development of dermoscopy over the last three decades, new targets have been added to its primary role of establishing whether a lesion is suspicious for malignancy and necessitates biopsy or follow-up [7-9].

Nowadays there is a tendency to use dermoscopy for pre-surgery establishment of tumor borders and for monitoring the response of some controllable cutaneous malignancies (such as lentigo maligna, superficial basal cell carcinoma & Bowen's disease) to some topical

therapies [10-13].

Aim of the Work

The aim of work was to assess the success of cryosurgery in the treatment of small nodular BCC lesions in addition to the periodic follow-up of patients

Patients and Methods

Ten patients suffering from small nodular BCCs were enrolled in the study

Exclusion criteria included:

- Lesions larger than 2 cms in diameter.
- Ischemic heart disease.
- Uncontrolled diabetes mellitus
- History of metastatic non-melanoma skin cancer.
- Lesions with high infiltration tendency (basal-squamous) and infiltrative lesions.
- Any treatment or participation in another study in the last 30 days.

All BCCs were clinically and dermoscopically evaluated and digitally documented using a hand held Dermlite DL3N dermoscope (3Gen, Inc., San Juan Capistrano, California, USA.) and a 10x optical zoom Samsung S4 Zoom camera (Samsung Electronics Co., Ltd., Yeongtong-Gu Suwon-Shi, South Korea) before starting treatment, before each session and during every follow-up session for 1 year afterwards.

The treatment plan was to perform a weekly session of two freeze-thaw cycles of liquid nitrogen Cryospray using the Brymill Cry-AC (Brymill Cryogenics Systems, Ellington, Connecticut, USA) on the target area (tumor and a perilesional margin of 5mm), each lasting for 20-30 seconds.

Results

Ten patients suffering from nBCC participated in the study. Prevalence of dermoscopic findings in these patients was as follows: microulcerations (80%), arborizing blood vessels and blue grey globules (70% each), maple leaf like structures, blue grey ovoid nests (30%) and peppering (20%).

There was gradual disappearance of the dermoscopic findings during the treatment sessions which were continued till all dermoscopic findings disappeared and replaced by rosy whitish diffuse areas with or without small dotted blood vessels.

No signs of recurrence were seen in all patients during the one year follow-up period indicated by the presence of diffuse white scar tissue and maintained absence of dermoscopic structures seen at the initial visit (**fig 2, 3, 4**).

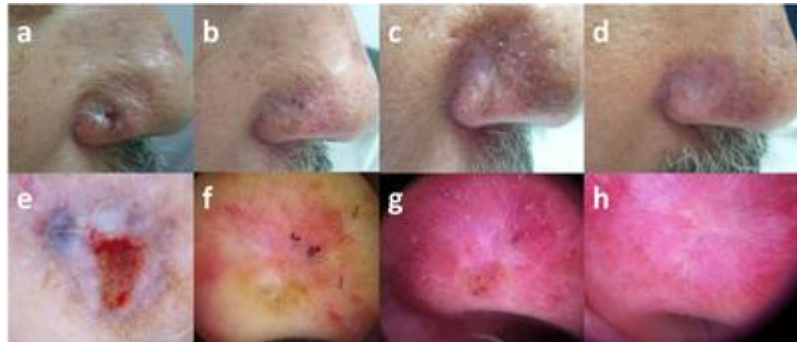


Fig 2: 52-year-old male patient, (a) initial visit, (b) after 2 sessions, (c) after 4 sessions, (d) after 6 sessions, (e-h) corresponding dermoscopic images (20x, contact, polarized) showing gradual disappearance of the initial ulceration, white structureless areas, blue grey globules and nests till complete cure (rosy white diffuse area).

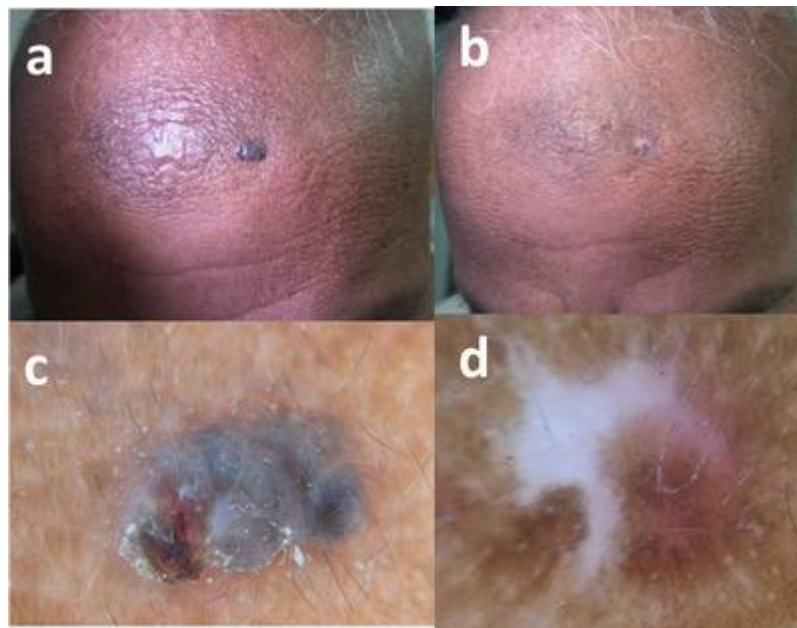


Fig 3: 63-year-old male patient, (a) initial visit, (b) 1 year after last session, (c) dermoscopy (30x, contact, polarized) in initial session shows diffuse blue grey ovoid nests and microulceration, (d) after 1 year follow up, only white scar tissue is present with progressive repigmentation from the periphery.

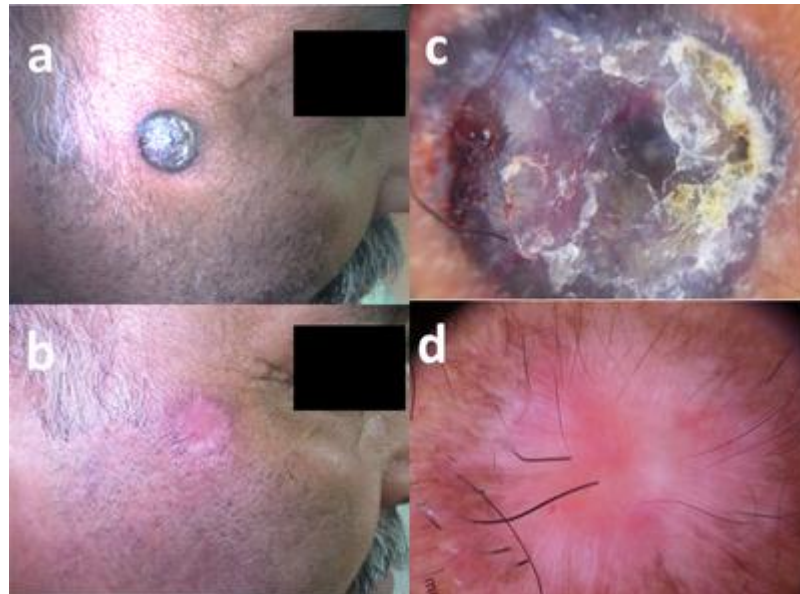


Fig 4 : 49-year-old male patient, **(a)** initial visit, **(b)** after 5 sessions, **(c)** dermoscopy (15x, contact, polarized) in initial session shows diffuse blur grey ovoid nests, arborizing blood vessels and microulceration, **(d)** disappearance of the initial findings and replaced by rosy white diffuse area.

Discussion

Dermoscopy has become an integrative part of the clinical examination of skin tumors. This is because it significantly improves the early diagnosis of melanoma and non-melanoma skin cancer (NMSC) including basal cell carcinoma and keratinocyte skin cancer compared with the unaided eye. Besides its value in the noninvasive diagnosis of skin cancer, dermoscopy has also gained increased interest in the management of NMSC. Dermoscopy has been used in the preoperative evaluation of tumor margins, monitoring of the outcomes of topical treatments and post-treatment follow-up therapies [14].

Apalla and coworkers in 2014 studied the applicability of dermoscopy in the evaluation of the outcome and monitoring of superficial basal cell carcinoma (sBCC) after nonablative therapies. They suggested that certain dermoscopic criteria, namely pigmented structures, ulceration and arborizing vessels, predict the presence of residual disease [residualdisease-associateddermoscopiccriteria(RDADC)] and they aimed to assess this hypothesis by biopsying lesions exhibiting RDADC 3 months after treatment and in the case of histopathological confirmation were excised, however lesions characterized by white/red structureless areas, superficial fine telangiectasias, or lacking any dermoscopic criterion, were monitored for 12 months. At the 3-month evaluation, one or more of the RDADC were detected in 25/98 (25.5%) sBCCs, in which histology confirmed tumor persistence. In 45 (61.6%) of the 73 remaining lesions, dermoscopy showed white/red structureless areas and/or superficial fine telangiectasias. Twenty-eight lacked any dermoscopic criterion of sBCC. The two latter groups entered follow-up. In total, disease recurred in 13 (17.8%) of the 73 lesions. Based on that they concluded that RDADC accurately predict residual

disease. Absence of dermoscopic criteria of sBCC safely predicts complete histopathological clearance. Detection of white/red structureless areas and/or superficial fine telangiectasias warrants close monitoring to recognize early recurrence. [15].

In our study, we used an efficient topical destructive therapy for small nBCCs, which is liquid nitrogen spray cryosurgery (5 year cure rate = 92%), and we didn't stop sessions unless complete disappearance of all dermoscopic structures was evident and no recurrence was seen neither clinically nor dermoscopically for a one year follow-up, indicating that absence of dermoscopic structures can be really dependable in follow-up of non-invasive modalities of treatment for BCC.

Conclusion

Cryosurgery is an effective method in the treatment of basal cell carcinoma patients and dermoscopy is also an effective and dependable tool for follow-up of non-invasive treatment modalities generally and cryosurgery specifically in cases of nBCC.

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