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Diagnostic accuracy of optical coherence tomography in the assessment of in vivo primary basal cell carcinoma resection margins prior to Mohs Micrographic Surgery

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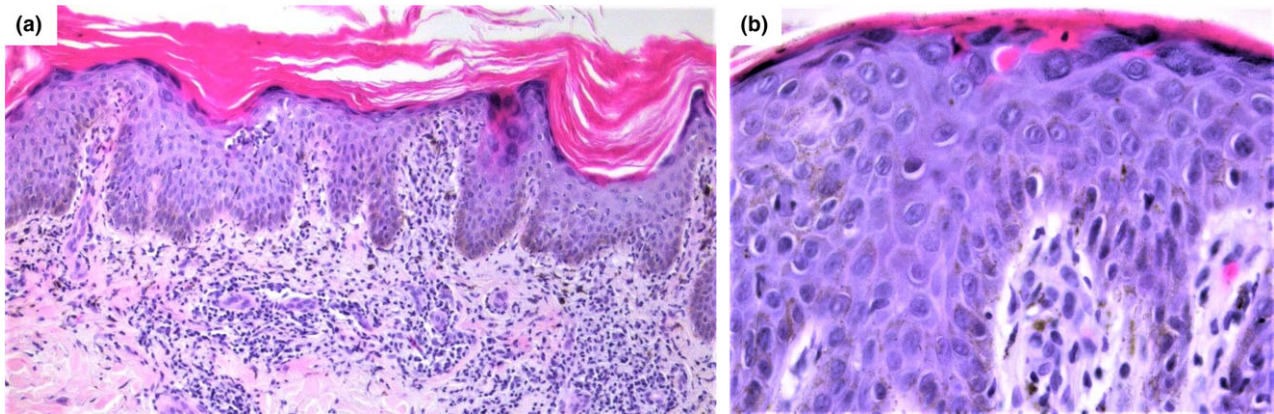
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Figure 2 (a, b) Lichenoid drug eruption, histopathological features: (a) Irregular acanthosis, compact hyperkeratosis, focal parakeratosis, and band-like lymphocytic infiltrate at the superficial dermis (hematoxylin and eosin; ×100); (b) Colloid bodies at the epidermis and dermal melanophages at the superficial dermis (hematoxylin and eosin; ×400).

As such, we describe a disseminated lichenoid eruption after the Oxford–AstraZeneca COVID-19 vaccine to broaden the knowledge about adverse cutaneous reactions to this vaccine. Nevertheless, this adverse event should not discourage vaccination against such a life-threatening virus.

Data availability statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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LETTERS TO THE EDITOR

Diagnostic accuracy of optical coherence tomography in the assessment of *in vivo* primary basal cell carcinoma resection margins prior to Mohs Micrographic Surgery

Dear Editor,

The diagnostic accuracy of optical coherence tomography (OCT) for *in vivo* assessment of resection margins of basal cell carcinoma (BCC) prior to Mohs Micrographic Surgery (MMS) remains unknown.[1] Therefore, we conducted a multicentre, case-control study with the objective to estimate sensitivity and specificity values.

Included were patients with a biopsy-proven primary BCC and an indication for MMS,[2] who visited the dermatology outpatient clinic of Maastricht University Medical Centre+ or Mohs Klinieken in Hoorn, The Netherlands. OCT scans of BCCs were obtained prior to MMS. A random sample of quadrants of these OCT scans was evaluated independently by two observers. The random sample consisted of BCC quadrants, which according to histopathological examination contained tumour tissue in resection margins (cases) as well as BCC quadrants free from tumour tissue in resection margins (controls). An ultimate diagnosis on whether tumour tissue was visible on OCT was reached by consensus.

A total of 194 quadrants (92 cases and 102 controls) were included for analysis. Table 1 shows the trade-off between sensitivity and specificity. When confidence scores 2–4 were defined as a positive OCT result, tumour was visible with OCT in 58/92 cases, corresponding with a sensitivity of 63.0% (95% CI: 55.1–70.6). In 54/102 controls, no tumour tissue was visible with OCT, corresponding with a specificity of 52.9% (95% CI: 45.8–59.7). A few small-sized studies showed more favourable results with respect to the ability of OCT to correctly predict resection margins; however, sensitivity and specificity were not reported.[1,3–5]

When OCT is used to correctly predict resection margins, the periphery of a tumour is scanned and only minimal presence of tumour tissue has to be discovered, which may be an explanation for the low sensitivity. The low specificity and consequently high number of false-positive OCT results may be due to misinterpretation of sebaceous glands for nodular tumour nests (Fig. 1b) and vessels for infiltrative tumour nests. Sebaceous glands are abundant on the nose, and in our study, 39.7% of the included BCCs were located on the nose. The penetration depth of the OCT device (up to 1.5 mm) might also limit an accurate assessment. Furthermore, the mean depth of aggressive and nodular BCCs in the head and neck area is 1.5 and 1.7 mm, respectively, and the penetration depth might not be sufficient to detect deeper located BCC nests (Fig. 1a).[6] This might not be a problem when OCT is used for diagnosis of BCC, as BCCs contain more superficially located nests in the centre of the tumour.[7] However, for margin assessment, only peripheral borders of tumours are scanned. If only deeper located nests are present there, these are invisible on OCT images. Another explanation for the high number of false-negative OCT results can be that OCT images are obtained in a perpendicular fashion with a 90°angle, whereas a bowl-shaped excision with 45° angles is used in MMS.[8] The clinically drawn margin and the deeper margins of the cutting edge differ, as the surgeon cuts towards the tumour.

The usefulness of OCT in MMS depends on diagnostic accuracy, time needed for OCT evaluation and costs. Based on our findings the accuracy was poor. We also found that the procedure was time consuming and difficult to implement within a well-balanced workflow in MMS. Furthermore, it must be realized that costs include the purchase of the OCT device, training of personnel and extra scanning time.

In conclusion, based on the results of the current study, the use of OCT for the assessment of BCC resection margins prior to MMS cannot be recommended in clinical practice yet.

Table 1 Diagnostic parameters for various cut-off values of the confidence score [level of confidence in BCC diagnosis was recorded on a five-point Likert scale (0 = certainly not a BCC; 1 = suspicion of BCC presence is low; 2 = suspicion of BCC is high; 3 = surely BCC but uncertain about subtype and 4 = surely BCC and certain about BCC subtype)]

	Observer 1	Observer 2	Consensus
Cut-off 1234 vs. 0			
Sensitivity	81.5 (75/92)	88.0 (81/92)	-
Specificity	22.5 (23/102)	11.8 (12/102)	-
PPV	48.7 (75/154)	47.4 (81/171)	-
NPV	57.5 (23/40)	52.2 (12/23)	-
Cut-off 234 vs. 01			
Sensitivity	56.5 (52/92)	55.4 (51/92)	63.0 (58/92)
Specificity	52.9 (54/102)	53.9 (55/102)	52.9 (54/102)
PPV	52.0 (52/100)	52.0 (51/98)	54.7 (58/106)
NPV	57.4 (54/94)	57.3 (55/96)	61.4 (54/88)
Cut-off 34 vs. 012			
Sensitivity	37.0 (34/92)	35.9 (33/92)	-
Specificity	72.5 (74/102)	70.6 (72/102)	-
PPV	54.8 (34/62)	52.4 (33/63)	-
NPV	56.1 (74/132)	55.0 (72/131)	-
Cut-off 4 vs. 0123			
Sensitivity	13.0 (12/92)	7.6 (7/92)	-
Specificity	91.2 (93/102)	90.2 (92/102)	-
PPV	57.1 (12/21)	41.2 (7/17)	-
NPV	53.8 (93/173)	52.0 (92/177)	-

For example, using a cut-off value of 34 vs. 012, only lesions that were surely BCC according to the OCT observer were defined as a positive OCT result, all other scans were defined as a negative OCT result. Consequently, specificity is high in this category at the cost of sensitivity. When using lower cut-off values for the definition of a positive OCT result, sensitivity increases and specificity decreases.
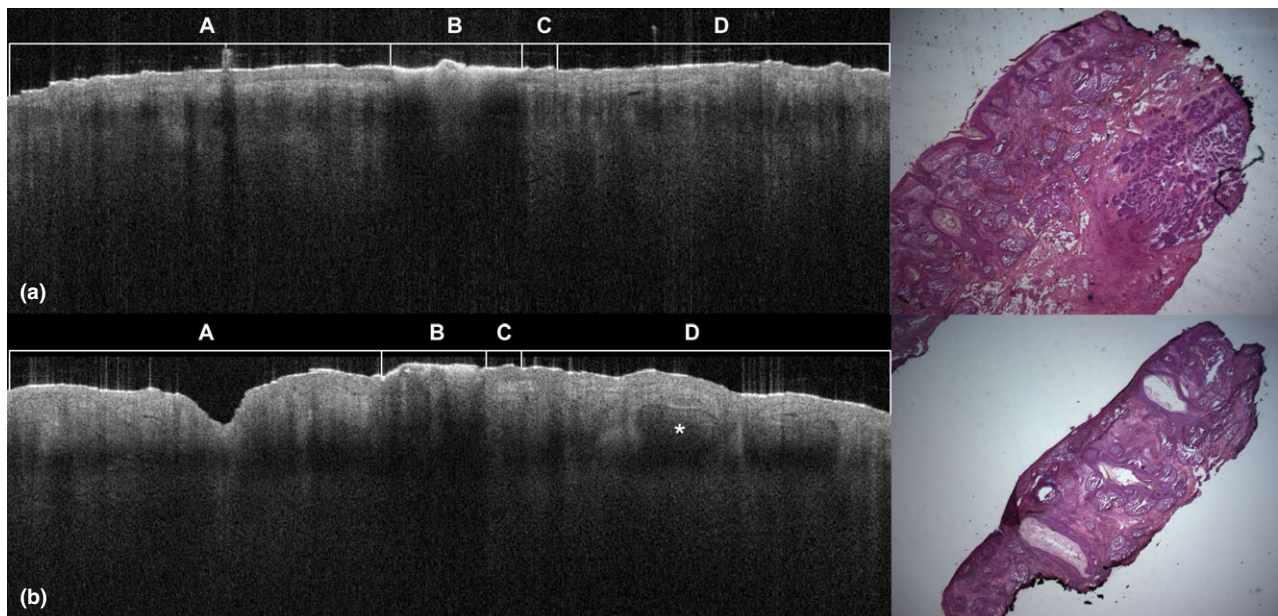
Conflict of interest
None declared.

Data availability statement
Data will be made available upon request.

Figure 1 OCT images of a false-negative and a false-positive margin in comparison with the corresponding histology. A, Tumour tissue and 2-mm safety margin. B, White line drawn with POSCA PC-1MV pen visible as a white hyperreflective line, casting a shadow underneath. C, Primary resection margin directly next to the white line. D, Tissue that was assessed. (a) False-negative margin in comparison with the corresponding histology. Histology shows a nodular and micronodular BCC in the deep margin. D: In this part, no BCC characteristics are visible. (b) False-positive margin in comparison with the corresponding histology. Histology shows adnexal richness without the presence of BCC nests. D: In this part, an adnexal structure (asterisk) was misinterpreted as BCC nest.

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Dermoscopy and reflectance confocal microscopy of Kaposi's sarcoma: an overview

Dear Editor,

Kaposi's sarcoma (KS) is a multifocal systemic disease originating from vascular structures, associated with human type 8 herpesvirus and mainly affecting elderly men (male : female ratio, 10-15 : 1).[1,2] Dermoscopy and reflectance confocal microscopy