

## Utility of RCM over dermoscopy for diagnosis of lesions equivocal for BCC: A comparative human readers and AI study

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### INTRODUCTION

- Reflectance confocal microscopy (RCM) improved the diagnosis of basal cell carcinoma (BCC) but its utility over dermoscopy for equivocal lesions has not been evaluated
- Artificial intelligence (AI) algorithms have been developed to aid automated detection of BCC on RCM
- However, as diagnosis in clinics relies on dermoscopy and RCM, a combined algorithm would be valuable for equivocal lesions

**Objective:** To perform a multi-reader, retrospective cross-sectional, study to assess the utility of RCM over dermoscopy for diagnosis of equivocal lesions  
To develop, for the first time, a multi-modal dermoscopy-RCM AI algorithm and compared it the human reader performance

### MATERIALS AND METHODS

#### Dataset

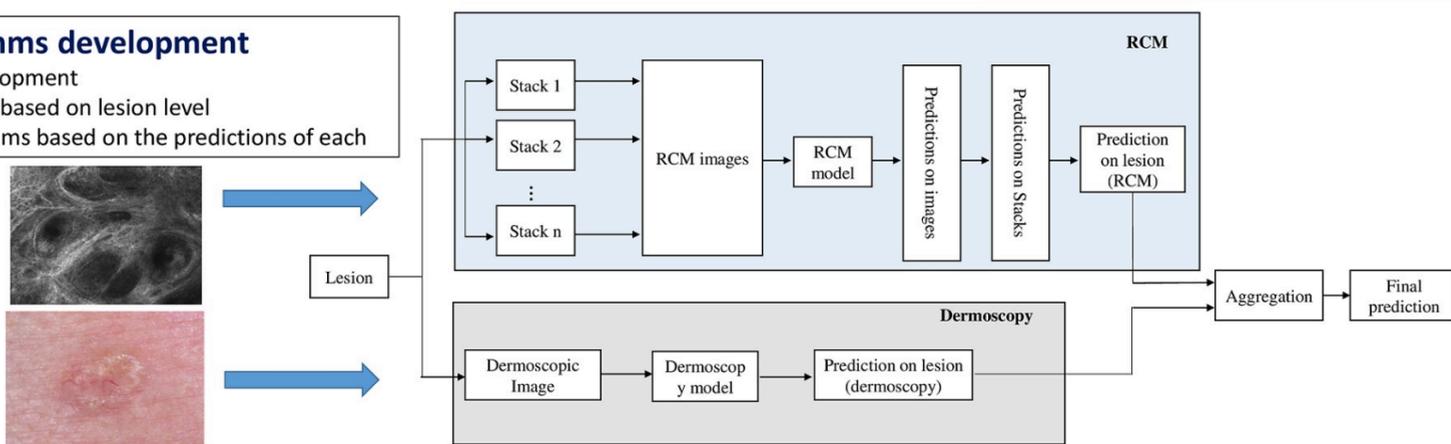
**249 lesions (144 bcc, 105 non bcc)**  
**15 readers (including 4 experts)**

#### A. Reader study

- Readers analyzed first **dermoscopy images** and gave a diagnosis of BCC or not-BCC along with confidence level
- Readers analyzed second **RCM images** and gave a final diagnosis of BCC or not-BCC along with a new confidence level

#### B. Multi-modal algorithms development

- Dermoscopic algorithm development
- RCM algorithm development based on lesion level
- Fusion between both algorithms based on the predictions of each

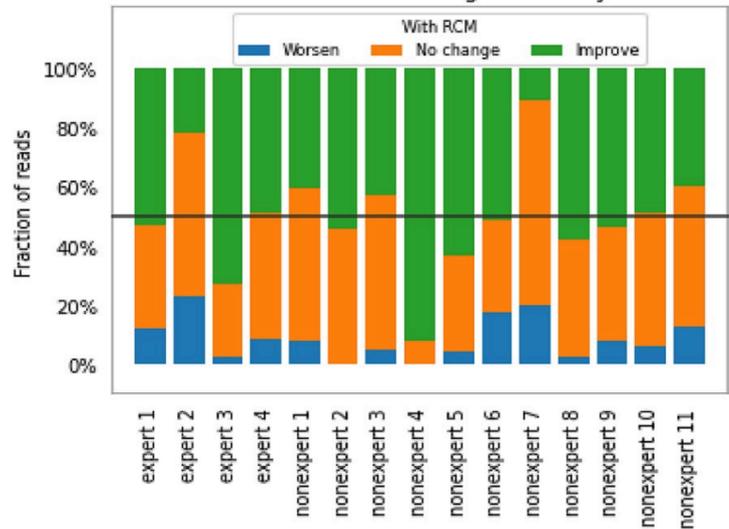


### RESULTS

#### A. Reader study

Reader class	Imaging modalities	sensitivity	(95% CI)	p-value	specificity	(95% CI)	p-value
Overall	With RCM	76.9%	(73.3 – 80.1)	0.320	53.5%	(48.6 – 58.3)	0.919
	Dermoscopy	75.1%	(71.4 – 78.5)		53.7%	(48.8 – 58.5)	
Nonexperts	With RCM	75.6%	(71.2 – 79.5)	0.464	50.7%	(44.9 – 56.4)	0.807
	Dermoscopy	74.2%	(69.7 – 78.1)		51.4%	(45.6 – 57.1)	
Experts	With RCM	80.1%	(73.3 – 85.6)	0.499	60.3%	(51.2 – 68.8)	0.860
	Dermoscopy	77.6%	(70.6 – 83.4)		59.5%	(50.4 – 68.0)	

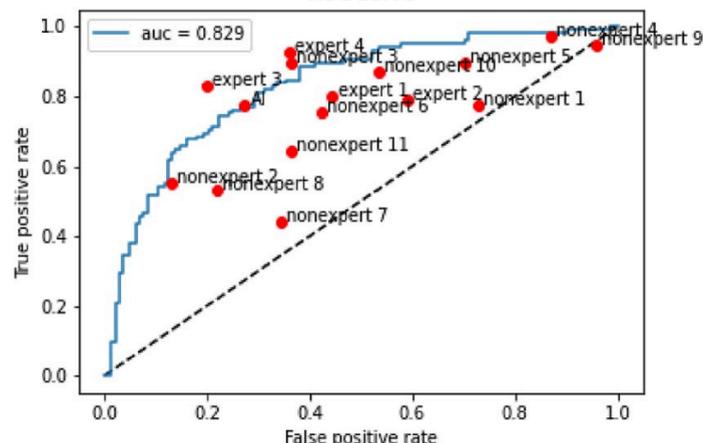
#### Confidence change tendency



#### B. Multi-modal algorithms performances

		AUC	Sensitivity	Specificity
Efficient Net B2	Dermoscopy	0.71	71,3%	61,3%
	RCM			
Efficient Net B0	Image-level	0.76	66,5%	73,4%
	Lesion-level	0.81	70,1%	80%
Efficient Net B0 – B2	Fusion	0,829	77,6%	72,6%

#### ROC curve



### CONCLUSION

**RCM can play an important role in improving the management of equivocal lesions by improving clinician's confidence**  
**A combined Artificial Intelligence algorithm can further assist in the automated diagnosis, beneficial for novices**

