Reflectance confocal microscopy and optical coherence tomography for the diagnosis of bullous pemphigoid and pemphigus

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Introduction & Objectives: Bullous pemphigoid (BP) and pemphigus (P) are autoimmune diseases characterized by the presence of blisters on the skin and/or the mucous membranes. The diagnosis of these bullous diseases is based on a combination of criteria encompassing clinical features, histology, immunofluorescence and laboratory data. The aim of this study was to evaluate features of BP and P at reflectance confocal microscopy (RCM) and optical coherence tomography (OCT) in order to provide a rapid non-invasive bed-side diagnosis. Secondary objective was to evaluate the detectability of clinically non-visible lesions.

Material & Methods: This was an observational, retrospective, multicentre study (University of Modena, Italy and University of Saint-Etienne, France) in which patients with suspicious lesions for BP or P underwent clinical assessment, RCM, OCT, blood tests and skin biopsy for histological and direct immunofluorescence examinations. A total of 72 lesions in 24 patients (16 with PB and 8 with P) were evaluated. Apparently unaffected skin was examined in order to test sub-clinical lesion detectability in all patients. Data analysis was performed from January 2014 to December 2015.

Results: RCM was able to detect sub-epidermal and intra-epidermal blisters respectively in 75% and 50% of the patients affected by BP and P. At OCT the exact blister level was identified in all BP and P cases'. Acantholytic cells were observed only at RCM in P (62.5%). Fibrin deposition inside the blisters was only found in PB, evidenced both at RCM and OCT. Subclinical bullae were revealed on clinically healthy skin at OCT in some cases of BP and P.

Conclusions: RCM and/or OCT can assist the clinician in providing rapid information through a non-invasive procedure for a rapid diagnosis of BP and P. Combined use of RCM and OCT for a real-time examination of the skin lesions associates the higher resolution of RCM with the greater penetration depth in cross-sectional view of OCT, providing in vivo quasi-histologic information.