Because we have investigated two cases, our findings should be confirmed in a larger study. However, we believe these two cases strongly suggest that T cells recruited into the lung may be exposed to autoantigens, selectively expanding by antigen-driven responses. Further studies are needed to identify T-cell epitopes of pathogenic antigens, which may potentially lead to the development of immunospecific molecule-targeted therapies, such as the induction of anergy by peptide/protein analogues similar in structure to culprit autoantigens [9, 10].

**Rheumatology key message**

- T cells may play a pivotal role in the pathogenesis of PM-associated IP via antigen-driven mechanisms.

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**Comment on: A novel arthritis in vivo fluorescence optical imaging technology pushed to the limits**

Sir, Indocyanine green (ICG)-enhanced fluorescence optical imaging (FOI) with the Xiralite system is a novel imaging technology in rheumatology [1]. Like all other techniques, its methodology and interpretation of images need some experience. In FOI potential pitfalls may arise during image acquisition, adjustment and automatic generation of composite images. In our centres, the Xiralite system was established in June 2009 and in February 2010. So far our experience covers more than 2000 studies in more than 1500 subjects with a wide spectrum of diagnoses and a broad range of ethnic origin. In a recent letter to the editor [2] the authors state that FOI will be pushed to the limits in some circumstances. In a case report they object to the inconsistency between FOI findings and clinical disease activity and assume that the patient’s dark-coloured skin could have impaired the FOI study. They hypothesize that absorption of light was reduced by melanin. The references cited [3, 4] relate to the use of visible light and light within the UV spectrum. However, the Xiralite system uses light in the
near-infrared spectrum. In this spectrum, the absorption of melanin plays only a minor part [5, 6].

Irrespective of whether we cannot share the observation of the authors in comparable clinical cases, the example given is not suited to proving their assertion. In the FOI image of Schäfer et al. [2], a part of the infusion tube that was used for the administration of ICG is visible (lower part of the screen). In such cases, the extreme fluorescence optical signals from this area lead to a strong downregulation of gain by the automatic image adjustment, resulting in distinct suppression of signal intensity in the other areas. The situation is comparable to the pronounced underexposure of photographs under heavy backlight conditions, e.g. bright sun directly in the visible field. The Xiralite system enables manual gain correction with the conventional supplier software, which is required under these particular circumstances. The FOI images in Schäfer et al. [2] display very weak signal intensities in projection to the joints (very light green) in the underexposed field of the screen (blue areas). We suppose that they would be clearly visible in the common red colour with the correct gain adjustment. Unfortunately, the authors cut the scaling on the right side, thus the gain adjustment is not seen. In most cases, correct gain covers a range of 20,000–50,000 AU, and in the case of a later camera system 5000–12,500 AU.

To illustrate our experience with such pitfalls, we want to present a similar case (Fig. 1). It is a female patient (42 years old) with longstanding PsA. At clinical examination, 16 tender joints and 8 swollen joints, ESR 30 mm/h, DAS28 5.42 were seen.

Apparently the FOI images presented by Schaefer et al. have not been generated with the appropriate imaging software. The authors also confined themselves to the interpretation of a composite image. We have already shown that the adequate interpretation of FOI images requires the reading of the full sequences and of phases P1–P3 in addition to the composite image [1]. With this approach, misinterpretation of FOI findings can be avoided under difficult and complicated technical conditions.

In conclusion, the observation of Schaefer et al. in our eyes does not disclose unexpected immanent limits of ICG-enhanced FOI. But it demonstrates that misinterpretation of FOI findings may arise from technical errors in the performance of the method and failures in the application. But with the use of the corrective potentials and with experience with this novel, emerging...
technology, the stated problems in interpretation could be diminished.

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References


Comment on: A novel arthritis in vivo fluorescence optical imaging technology pushed to the limits: reply

Sirs, In our case report we described the fluorescence optical imaging (FOI) findings in a patient with dark-coloured skin suffering from RA, which were inconsistent with the clinical and ultrasonographic evidence. We proposed that this surprising observation might be attributed to the skin pigmentation [1).

In a comment, Werner et al. [2] hypothesized that our image interpretation was incorrect due to down-regulation of gain by extreme fluorescence optical signals emitted from the infusion tube, which they located near the area of fluorescence signal acquisition. However, there is no infusion tube visible in our FOI images, as it was placed into a cubital vein of the patient for the application of the contrast media. The structure probably interpreted by Werner et al. as an infusion tube is indeed part of the darkening curtain required to protect the fluorescence detection chamber (Fig. 1). In addition, we adhered strictly to the official measurement and interpretation guidelines, utilizing the most recent version of the software program (Xiralyze) provided by the manufacturer (mivenion GmbH, Berlin, Germany). Our FOI interpretation was checked by two physicians (W.H. and V.S.S.) with long-term experience in FOI analysis with the Xiralyze software. To substantiate our findings, we added the composite images of phases I, II and III, including the spectrum of gain, which has been adjusted to the maximum level (Fig. 2).