

- [Abstract](#)

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PpIX fluorescence combined with auto-fluorescence is more accurate than PpIX fluorescence alone in fluorescence detection of non-melanoma skin cancer: an intra-patient direct comparison study.

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Author information

Abstract

BACKGROUND:

Previous research on fluorescence detection of non-melanoma had mixed results. An accurate non-invasive method for the detection of skin cancer is valuable to dermatologists because of the high incidence of skin cancer among the aging population. One notable difference between the methods of fluorescence detection previously studied was the use of the auto-fluorescence of the skin. Currently, there has not been a direct comparison between both methods of fluorescence detection.

OBJECTIVE:

To compare the accuracy of PpIX fluorescence and auto-fluorescence normalized PpIX fluorescence detection systems for the localization non-melanoma skin cancers (NMSC).

METHODS:

We conducted an observer blinded direct comparison of both methods. Thirty patients, 14 females and 16 males, mean age 62 (SD = 9 years), skin type I to III and being suspected of having one or more NMSC, visited an independent treatment centre for dermatology. The patients were investigated using a fluorescence detection system capable of both normalized and non-normalized PpIX fluorescence measurements. Liposomal encapsulated 5-aminolevulinic acid was used as a photosensitizer. For each area being investigated, the associated normalized and non-normalized fluorescence measurements were directly compared. The results of the analysis were confirmed by clinical investigation using a dermatoscope. Both methods were evaluated based on the number of true and false positives and the number of true and false negatives. Specificity and sensitivity were calculated. Statistical significance of the findings was determined using Pearson's Chi-squared test.

RESULTS:

The non-normalized method was found to have a sensitivity of 27 % and a specificity of 39 % and the normalized method has a sensitivity of 97% and a specificity of 100%. This difference is statistically significant ($p < 0.05$).

CONCLUSION:

Using auto-fluorescence in PpIX fluorescence detection of NMSC is more accurate than PpIX fluorescence detection alone.

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