

# Review of clinical criteria identifying actinic keratosis at high risk of progression to invasive squamous cell carcinoma

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**Introduction & Objectives:** Some actinic keratosis (AK) with time progress to invasive squamous cell carcinoma (SCC). At present, to prevent development of invasive cancer most guidelines suggest treatment of all AK. Nevertheless, identification of most reliable clinical criteria would help to administer targeted therapy to specific lesions with higher risk apart from treating the field. Till now a literature search by *Quaedvlieg et al.* in 2006 identified a single prospective study and four reviews allowing to propose clinical criteria with acronym IDRBEU, that unites induration/inflammation, diameter > 1 cm, rapid enlargement, bleeding, erythema and ulceration. In addition, previous reports have suggested resistance to therapy and hyperkeratosis as clinical criteria for transformation of AK to SCC. Our objective was to review the recent literature in order to obtain new clinical criteria of AK with highest risk of progression to invasive SCC.

**Materials & Methods:** We systematically searched MEDLINE Complete database from 2005 till 2020 with search string: “actinic keratosis” AND “progression” AND “risk”. Only articles in English and French were analyzed. Only prospective studies and studies or guidelines stating expert opinion were included. Review articles were excluded to avoid duplicate data from including a prospective study and its’ citation in a review. Nevertheless, references of review articles were screened for other relevant articles.

**Results:** The search string identified 85 articles. Review of references provided additional 33 possible articles. After title, abstract and full text review 13 eligible articles were identified. The included publications marked lesion, field and localization features associated with higher risk of AK transforming into SCC. We were able to group lesion characteristics into several categories. First of all, size. Higher transformation risk have been identified in large (>1 cm<sup>2</sup>) or confluent lesions, also known as “AK patch” and lesions changing in size. Second, subjective feelings, specifically pain, tenderness and sensitivity to palpation. Third, surface characteristics as bleeding and budding. Fourth, deep infiltration. In addition, one of the articles suggested to consider difficult-to-treat lesions at higher risk, although this was later questioned by *Ehrig et al.*, as they found little difference between incidence of SCC at baseline and treatment resistant lesions. The identified field characteristics were AKs and field change in general, presence of ≥ 3 AKs or ≥ 3 AK patches, in any of 7 predefined facial skin areas or if more than a quarter of the skin area is affected by AKs, value of actinic keratosis area and severity index of over 7. In addition, SSC was detected more commonly in several anatomic areas as lips, cheeks, periorbital area, eyelids, ears, dorsal hands, forearms and legs.

**Conclusion:** Apart from lesion specific, also field and anatomical factors can help to identify high risk lesions.

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