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Abstract

Predicting the risk of metachronous basal cell carcinomas

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A third of basal cell carcinoma (BCC) patients will develop metachronous BCCs, but information is limited on the frequency, timing and predictors of these subsequent BCCs. We aimed to develop a prediction model to assess the absolute risk of metachronous BCCs.

We observed 14,628 participants of northwestern European ancestry from a prospective population- based cohort study (Rotterdam Study). BCCs were identified using a linkage with the Dutch Pathology Registry (PALGA). Predictors for subsequent BCCs included 14 patient, lifestyle, and tumor-specific characteristics. The prediction model was developed with Fine and Gray regression analysis to account for the competing risk of death. To correct for within patient correlation, we assessed non-parametric 95% confidence intervals with bootstrapping.

Among 1,077 patients with a first BCC, second to fifth BCCs occurred in 293, 122, 58, and 36 patients, with median follow-up times of 3.0, 2.1, 1.7, and 1.8 years, respectively. The risk of a new BCC was higher for patients with more metachronous BCCs (15% within 3 years after a first BCC; 34% after a second; 45% after a third; and 67% after a fourth). Having >1 BCC at diagnosis was another strong predictor of metachronous BCCs. Discriminative ability of the model was reasonable with apparent c- indices of 0.68, 0.71, and 0.69 at 1, 3 and 5 years, respectively.

We conclude that a combination of readily available characteristics can reasonably identify patients at high risk of metachronous BCCs. After external validation the risk predictions may be used to personalize the follow-up.