Association of smoking with common follicular cysts

To the Editor: Hair follicles commonly form 2 types of cysts. Epidermal inclusion cysts (EICs) result from follicular injury or occlusion and occur sporadically. Trichilemmal cysts (TCs) are neoplasms that develop from the outer follicular root sheath. These cysts present either sporadically or in an autosomal dominant pattern due to a variant in the *PLCD1* gene.[1] Hidradenitis suppurativa is severalfold more prevalent in smokers and, like EICs, related to follicular occlusion.[2] Lin et al found that male smokers may be more likely to develop facial EICs.[3] To further investigate the association between follicular cysts and smoking, we used the UK Biobank (dataset project number 66911) to conduct a study of 3193 EIC patients and 6096 TC patients.

We conducted multivariable logistic regression where the outcome was an IDC-10 diagnosis of EIC or TC, the main variable of interest was tobacco smoking status, and other variables accounted for were sex, age, and body mass index. Variables were selected based on data suggesting EICs occur more frequently in men and at an older age[4] and the assumption that increased body mass correlates with greater surface area from which cysts can potentially arise. Separate analyses for male and female populations were also performed. TC diagnoses were considered hereditary if the patient had a p.S460L germline variant in the *PLCD1* gene and sporadic if they did not. Only patients that had provided a smoking status and were living at the time of this study were included in the analysis. Statistical analyses were performed using R 4.1.3 (R Core Team) and the "rms" (Version 6.2-0) package.

Adjusted odds ratios (aORs) and the corresponding confidence intervals (CIs) are summarized in Fig 1. When compared to never smokers, both prior (aOR, 1.24; 95% CI, 1.11-1.37, $P < .001$) and current (aOR, 2.05, 95% CI, 1.77-2.37, $P < .001$) smokers were significantly more likely to be diagnosed with EIC. Similarly, prior (aOR, 1.19, 95% CI, 1.08-1.30, $P < .001$) and current (aOR, 1.59, 95% CI, 1.39-1.82, $P < .001$) smokers were more likely to be diagnosed with sporadic TCs than never smokers. In patients with the p.S460L variant, prior (aOR, 0.85, 95% CI, 0.73-0.99, $P = .002$) and current (aOR, 0.60, 95% CI, 0.44-0.82, $P < .001$) smokers were significantly less likely to be diagnosed with a hereditary TC than never smokers. The strength of association was greater for current smokers than for prior smokers for all cyst types. These associations persisted when each sex was analyzed independently, except in males diagnosed with hereditary TCs who were prior smokers. No statistically significant association was observed in this group.

This analysis suggests that smoking is a risk factor for both EICs and sporadic TCs and that current smokers are at the highest risk. Our study was limited in that we could not determine temporality between smoking and cyst formation. Moreover, TCs in patients with the p.S460L variant were assumed to be hereditary in nature, while these patients may also be capable of developing sporadic TCs. Considering this analysis and what is known about hidradenitis suppurativa, smoking may be more generally associated with disorders of follicular occlusion.

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Conflict of interest

None disclosed.

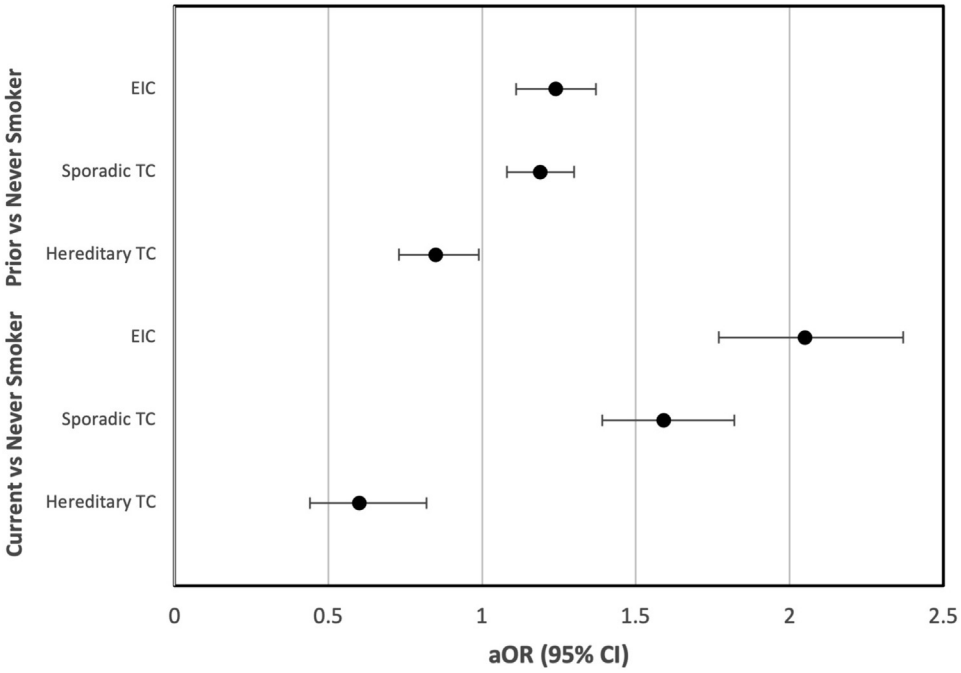

Fig 1. Epidermal inclusion and trichilemmal cyst risk in prior and current smokers compared to never smokers. *aOR*, Adjusted odds ratio; *CI*, confidence interval; *EIC*, epidermal inclusion cyst; *TC*, trichilemmal cyst.

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