SHORT COMMUNICATIONS

Early-onset basal cell carcinoma in young female endurance athletes: A report of three cases

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INTRODUCTION

Basal cell carcinomas (BCC) are the most prevalent cancer in the United States. While the vast majority of BCCs afflict those older than 55, recent data point to a rise in the incidence of sporadic BCCs in young Caucasian women less than 40 years of age.[1] To date, cigarette smoking, tanning bed use, and a history of blistering sunburns have been linked to this trend. [1,2] However, the potential role of intense, intermittent outdoor ultraviolet radiation (UVR) exposure as acquired through outdoor athletics has yet to be examined.

REPORT OF THREE CASES

The authors recently encountered three cases of early-onset, sporadic BCCs in young Caucasian females between the ages of 29-34, two of whom were amateur triathletes and the third an ultramarathon runner (Table 1, Figure 1).

DISCUSSION

This case series highlights the potential contribution of ambient UVR acquired through endurance athletics in sporadic, early-onset BCC. Barton *et al.* (2016) recently reported the largest case-control study of early-onset BCCs to date, demonstrating that they most often developed on the head and neck region of young women (mean age at diagnosis 43.3 ± 5 years) and were more likely than their later-onset counterparts to be of aggressive histological subtypes.[1] While our cases were consistent with these data by gender and anatomical location, our patients were diagnosed at an earlier age and with less aggressive histological subtypes.

Recent epidemiologic studies report an increased risk of early-onset BCCs among those with significant sun sensitivity and a history of blistering sunburns, but these studies did not ascertain the mechanism by which this was obtained.[1,3] Indeed, data addressing the contribution of endurance athletics-associated sun exposure to skin cancer risk are limited. Ambros-Rudolph *et al.* (2006) inferred an increased risk of melanoma among marathon runners based on the identification of a greater number of clinically atypical melanocytic nevi, solar lentigines, and lesions clinically suspicious for NMSCs in 210 marathon runners compared to age-matched controls with more pronounced findings among those logging the greatest number of weekly miles.[4] In another study, a beachfront screening program at a Texas Gulf Coast

Surfing event diagnosed BCCs in 16% (8 of 49) of surfers with a mean age of 38 years among those affected compared to 3.2% (1 of 53) in a control population.[5] In addition to sun exposure acquired during frequent training, dosimetric studies of full distance Ironman triathletes have documented substantial amounts of UV exposure during a single 8-10 hour event (mean minimal erythema dose of 8.3).[6]

We hypothesize that intense, intermittent outdoor UVR exposure acquired through endurance athletic training puts athletes at increased risk of early-onset BCC and other NMSCs. Misconceptions regarding the extent of UVR exposure during cloud covered days or early mornings and inadequate use of sunscreen or sun protective clothing may be contributing factors. This clinical observation identifies a high-risk population who may benefit from targeted screening efforts and close clinical follow-up. In addition, continued advocacy regarding use of sun-protective measures and training-specific lifestyle modifications to reduce exposure to ambient ultraviolet radiation are warranted.

Table 1: Clinical data from patients with early-onset basal cell carcinoma

Case	Age/Sex	Clinical History	Physical Exam	Pathology	Endurance athletic outdoor training history	Sun protective measures	Other skin cancer risk factors
1	29/F	Irritated lesion on right neck for 10 months	0.7 cm erythematous, ovoid plaque with irregular, rolled borders	Superficial and nodular BCC	Ultramarathon runner: 5-6 days per week for 2-3 hour runs. Participated in several outdoor ultramarathon races annually, lasting from 6-15 hours	SPF 30+ without reapplication, no sun protective clothing	Denies history of blistering sunburns or tanning bed use
2	30/F	Non-healing erosion on right nasal sidewall for 3 months	0.4 cm pink, pearly papule with surrounding telangiectasia and central hemorrhagic crust	Superficial and nodular BCC	Amateur triathlete: 5 days per week for 1-3 hour sessions	Denies use of sunscreen or sun-protective clothing	Denies history of blistering sunburns or tanning bed use
3	34/F	Irritated lesion on right cheek for 1 year	0.2 cm pink, dome-shaped papule	Nodular BCC	Amateur triathlete: 4-5 days per week for 1-2 hour sessions	SPF 30+ without reapplication	Several years tanning bed use; worked as poolside lifeguard for 6 years

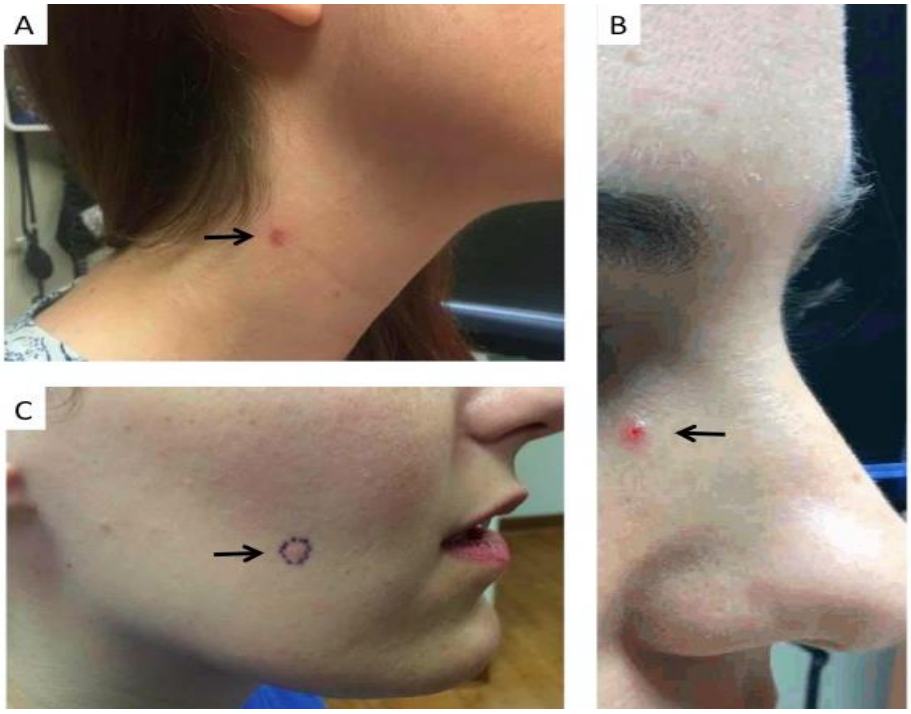

Figure 1: Clinical images of early-onset basal cell carcinomas (BCC) identified in three young endurance athletes A) Case 1: 29-year-old female ultramarathon runner with superficial/nodular BCC on right neck. B) Case 2: 30-year-old female triathlete with superficial/nodular BCC on right nasal side wall. C) Case 3: 34-year-old Caucasian female triathlete with nodular BCC on right cheek.

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