

## SHORT COMMUNICATION

### Itch and Pain Characteristics in Skin Carcinomas

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Pain is a common feature of cancer (prevalence rate between 52% and 77%) (1), but it is not usually reported in skin cancers. Same for itch, with the exception of cutaneous T-cell lymphomas (2). However, in recent studies itch (3) and pain (4) were found to be common features of non-melanoma skin cancers. A study by Yosipovitch et al. (5) found prevalence of both itch and pain to be greater in squamous cell carcinoma (SCC) (46.6% and 42.5%, respectively) than in basal cell carcinoma (BCC) (31.9% and 19.9%, respectively). The aim of the current study was to evaluate the characteristics of sensory symptoms of BCC and SCC in a French population.

#### METHODS

From 1 April 2015 to 31 July 2015, all patients presenting with a skin lesion suspicious for carcinoma (BCC or SCC) at the Department of Dermatology of the Military Hospital in Brest were included in the study. Exclusion criteria were: age under 18 years, and inability to complete the questionnaire because of cognitive impairment. All skin cancers were confirmed via histology.

After providing oral consent, participants completed a questionnaire about pain (numerical visual analogue scale (VAS) (6), DN4 questionnaire to identify neuropathic pain (7)), itch (VAS (8), a questionnaire used in previous studies (9, 10), and the validated 5-D itch scale (11)) and other sensations (burning, sensation of electric shocks, crawling, stinging, numbness, tickling, stabbing, pinching and biting). Clinical (location, size and presence of clinical ulceration) and histological data were collected for carcinomas.

The study protocol was approved by the university hospital's ethics committee.

All data were analysed using Microsoft Office Excel 2007 and R 3.2.1 software. Fisher's exact test was used to compare qualitative variables. Wilcoxon-Mann-Whitney test or Student's *t*-test (in the case of normal distribution) was used to compare quantitative variables. *p*-value < 0.05 was considered significant.

#### RESULTS

This study included 110 patients, representing a total of 119 histopathologically confirmed non-melanoma skin cancers: 89 BCCs and 30 SCCs. The demographic data, clinical and histological characteristics of carcinomas and sensations are shown in Table SI<sup>1</sup>. Mean age was 73.5 ± 12.6 years in patients with BCC and 77.1 ± 12.7 years in patients with SCC. Fifty-six percent of patients with BCC and 43% of patients with SCC were male.

Pain prevalence was significantly greater in SCC (33%) than in BCC (4%) (*p* < 0.001). Itch was the most common sensory symptom reported in the 2 groups (33% of SCC and 22% of BCC), but the difference was not significant. Itch features are shown in Table SII<sup>1</sup>.

Fourteen patients reported having a painful lesion: 3 patients experienced pain only when they touched the lesion, 9 patients ranked their pain as mild, and 2 patients as moderate. None of the patients with BCC and 3 patients (10%) with SCC described neuropathic pain (DN4 score ≥ 4) and the difference was significant (*p* < 0.05). Seven percent of lesions were reported to be associated with both pain and itch.

Itch was the most common sensory symptom reported in the 2 groups (33% of SCC patients and 22% of BCC patients). Comparing SCC and BCC, there was no significant difference concerning itch frequency, itch intensity or scratching. Most patients (20/30) could not identify whether pruritus tended to appear more frequently at a specific time of day (morning, afternoon, evening or night). Itch appeared more frequently in the morning in 1 patient, in the evening in 6 patients, and at night in 3 patients.

The mean 5-D itch scale score was 9.1, range 5–12. The only significant difference was that itch exacerbation during the last 2 weeks was significantly associated with SCC compared with BCC (*p* = 0.005).

No patient reported electric shocks, crawling, numbness or stabbing. Nine percent of patients with BCC and 31% of patients with SCC reported stinging. This difference was borderline significant (*p* = 0.05).

Twenty-nine BCC and 16 SCC presented with clinical ulceration, and the presence of clinical ulceration was significantly higher in SCC than in BCC (*p* = 0.036).

#### DISCUSSION

Our findings confirm the recent results of Yosipovitch et al. (5); indeed, pain, and especially itch, are common symptoms of non-melanoma skin cancers, with a prevalence of 12% and 25%, respectively.

In our study, the presence of pain was more common in SCC than BCC (33% vs. 4%; *p* < 0.001). The mean pain score was 3.1 (± 1.2) in SCC and 2.3 (± 0.6) in BCC with no significant difference. Mills et al. (4) revealed that patients presenting with a pain score higher than 2

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had a nearly 4-fold increase in the likelihood of having SCC vs. BCC, which could not be confirmed in our study. Neuropathic pain was significantly correlated with SCC, although there was no perineural invasion.

Itch was the most common symptom reported by patients with both skin cancers (33% of SCC patients and 22% of BCC patients). It has been reported in previous studies with varying prevalences: 43.5% of SCC patients and 33.4% of BCC patients in Mills et al. (4) and 22.6% of BCC patients and 27.3% SCC patients in Askari et al. (12).

Concerning itch characteristics, there was no difference between BCC and SCC. The mean intensity of itch was 2.8/10 ( $\pm 1.2$ ). The intensity appeared to be higher in SCC ( $3.1 \pm 1.3$ ) than in BCC ( $2.7 \pm 1.2$ ), but the difference was not significant. Most of the time, itch had been occurring for months or weeks. It lasted less than 6 h a day and was intermittent.

Concerning the other unpleasant sensations, there was no significant difference between SCC and BCC. Stinging sensations were most frequent in SCC, but this was only borderline significant. Askari et al. (12) compared the presenting signs of malignant melanoma, BCC, SCC and seborrhoeic keratosis in an elderly male population. Burning was more commonly reported by patients with BCC (4.4%) and SCC (4.2%) than by those with malignant melanoma (0%) and seborrhoeic keratosis (1.8%). In our study, burning was more commonly reported by patients with SCC (7%) than by patients with BCC (3%), with no significant difference.

Clinical and histopathological ulcerations were significantly associated with SCC. A large prospective study (5) examined the correlation of pain and itch with histological features of skin cancers. Pain intensity was significantly associated with the degree of inflammation, presence of neutrophils and eosinophils, ulceration, perineural invasion, depth of invasion and size of the tumour. Itch intensity was significantly associated with the degree of inflammation and the presence of eosinophils. The authors supported the theory that itch emanates from the upper layers of the skin, whereas pain is more associated with events in the deeper layers.

The limitations of this study are its monocentric design, the relatively small sample size and especially small subgroups with pruritus. Moreover, the questionnaire used to describe pruritus has not been validated. To reduce the recall bias, itch and pain characteristics were evaluated on the same day as the surgical procedure.

This study highlights that pain and pruritus are frequent symptoms in skin carcinomas. Some characteristics are more frequent in SCC than BCC: presence of pain, neuropathic pain, clinical ulceration, and itch exacerbation during the last 2 weeks.

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