Case Report

Basal Cell Carcinoma in a Construction Worker: Occupational Medicine and Exposure Prevention

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ABSTRACT

Occupational dermatoses are skin disorders caused by workplace exposure. The authors report the case of a construction worker whom, during routine evaluations, while performing medical surveillance, presented a pearly papule of hyperemic appearance located between the medial margin of the left eye and the bridge of the nose. The suspicion was of Basal Cell Carcinoma (BCC). The worker was sent by the occupational physician to a specialist dermatological consultation that confirmed the first suspect of BCC; after professional disease notice, a thorough surgical excision was advised and carried through. The exposure time to risk factors is crucial to the occurrence and evolution of such diseases and early diagnosis plays a key role in the prognosis of the disease. The occupational physician has a very important role, through health surveillance, to prevent, or early diagnose, work-related diseases; furthermore, workers' training is important to educate them to know, recognize and act to prevent the risks involved in their work.

INTRODUCTION

The occupational branch is one of the most relevant fields of the dermatological discipline due to its epidemiological, social and occupational impact. Dermatoses represent occupational diseases when they occur in the worker due to workplace contact with materials and substances of different nature, or because of the workers' specific job tasks [1]. The exposure time to risk factors is crucial to the occurrence and evolution of these diseases, as the slow and repeated pathogenic action over time can determine the onset of a chronic disease. On the other hand, dermatoses constituting an accident are caused by unpredictable events and are due to a sudden or violent cause occurring in the workplace within a short period of time. Moreover, paraprofessional dermatoses are constitutional dermopathies that can occasionally worsen due to exposure to work factors.

The occupational dermatoses can be classified, based on their pathogenesis, in: caused by contact with chemical (irritative or allergic), physical (from mechanical, thermal, solar or radioactive agents), or biological agents, occupational acne, occupational dyschromia (melanodermias and leukodermias), and occupational skin neoplasms [2]. The Basal Cell Carcinoma (BCC) is the most widespread

dermatological disease in the occupational field [3]; BCC is a slowly evolving epithelial tumor, with local malignancy, representing the most common form of skin cancer and develops from the cells of the epidermis or hair follicle.

Basal cell tumors occur mainly in exposed areas, in two thirds of the cases they are localized on the surface of the face, upper limbs and trunk, sparing the mucous membranes [4].

From a histopathological point of view, various subtypes have been described: nodular, superficial, infiltrating, morpheiform, micronodular, fibroepithelial BCC and basosquamous carcinoma [5]. Clinically, the varieties with which BCC can present are six: nodular (cystic), plano-cicatricial (sclerodermiform), superficial (pagetoid and erythematous), ulcus rodens, terebrating and pigmented [6]. The clinical types reflect the two main patterns of growth: multifocal (small tokens, adhering to the basal layer, with extension of the lesion superficially along the dermal-epidermal junction) and nodular (large nodules, between 0.5 and 1.5 cm, often ulcerated with deep growth and infiltration of the dermis). Among the treatment options, surgical excision or radiotherapy is the preferred methods.

The construction workers chronic exposure of the face, ears, neck, scalp, shoulders, and back, to solar ultraviolet radiation, must be considered for all purposes an occupational risk for the development of this type of cancer and skin cancers in general (BCCs and melanomas) [7], also in view of recent epidemiological data obtained comparing the incidence among outdoor workers versus indoor workers [8-11].

In accordance with Title VIII of Legislative Decree 81/08, preventive protective measures pertaining to photoprotection, include: (i) environmental photoprotection, through sheets and covers shielding, shielded cabins, portable structures (similar to umbrellas); (ii) organization of working time, avoiding direct sun exposure from 11 a.m. to 3 p.m. or from 12 p.m. to 4 p.m. in the summer time, if possible work indoors or in shady areas (trees or nearby buildings), with a rotation of work tasks between outdoors and indoors activities; (iii) eating meals in shaded areas; (iv) information and training for workers on the risk (i.e.: snow, ice, water, sand and concrete reflect sunlight, increasing the UV radiation that reaches the skin, even through clouds, and the intensity of solar UV radiation varies with seasons, geographical areas and altitude; glass almost completely blocks the transmission of ultraviolet radiation; sunscreen products reduce the incidence of both skin epithelial neoplasms and photo-ageing; do not take off your clothes, and use light, loose-fitting clothes that do not hinder movement, with long sleeves and long trousers [11,12].

CASE PRESENTATION

During routine evaluations of building workers in a construction company, while performing medical surveillance, a pearly papule of hyperemic appearance was observed in one of the workers, located between the medial margin of the left eye and the bridge of the nose. The patient, male, 43 years old, Type II on the Fitzpatrick Phototyping Scale, had been working as a construction worker for 23 years as a mason; he reported the onset of the skin lesion to be fairly recent.

The diagnostic suspicion was of BCC. The diagnostic procedures when a skin lesion is observed in workers exposed for prolonged periods of time to the sunlight is an immediate dermatologic counselling. The specialist, after evaluating the lesion through an accurate personal and work anamnesis, and after performing a physical examination, confirmed the first suspect of BCC. The occupational physician, after the specialist had confirmed the diagnosis, can proceed to signal an occupational illness.

After diagnosis confirmation and professional disease notice, a thorough surgical excision was advised and carried through; after removal, a post-excision histological examination was carried out, confirming the diagnosis.

For BCC, the recurrence rate in the first two years after surgery is high [13] when surgical excision is not properly conducted. Therefore, there is indication to carry out a yearly follow-up. The occupational physician can express an evaluation, deeming the worker fit to return to their specific job task, prescribing to the worker, if they remain exposed to the sunlight for prolonged periods of time, mandatory use of protective clothes and/or equipment [14,15], and adequate sunlight filters on the basis of exposed skin areas when performing job tasks, and the specific phototype of the worker.

DISCUSSION

The case discussed is a fairly typical BCC case in an exposed worker. In other similar cases, it is highlighted how the occupational physician plays a primary role in evaluating the workers, objectively, physically and clinically, by putting into

practice knowledge about occupational exposures and specific risks, to come to a timely diagnosis and treatment. Therefore, medical surveillance in workers with chronic exposure to sunlight and UV radiation is important to perform an adequate physical examination of the skin areas exposed to sunlight, in order to detect and assess the presence of precancerous or cancerous lesions, and evaluating occupational, individual and environmental tumoral risk factors that the worker is exposed to.

On the other hand, it is also necessary that a correct education and information of at-risk workers is carried out concerning skin protection, achievable mostly by clothes with appropriate protective features and sunscreen creams, and by providing cool and shadowed working environments during the summer and for the hours of the day when sunlight is most dangerous, in order to protect workers from the damages of sunlight exposure [16].

In Italy, the new Table of Occupational Diseases, based on art. 3 of the Republic President Decree 1124/1965 and subsequent amendments and additions, published in 2008 (Ministerial Decree of April 9th 2008) considers "cutaneous epitheliomas of photo-exposed sites (C44)" among the "diseases caused by UV radiation, including solar radiation" [11]. The work areas classified as at-risk for "work that exposes to UV radiation" in general and for "work that exposes to solar radiation at bathing establishments, on board of ships, in road construction sites, in quarries and open pit mines" specifically, a timeframe of maximum indemnity is provided, by the Insurer Institute, with no time limit from the cessation of work exposure.

Overall, this case presents as a typical case of BCC. The onset in a construction worker often exposed to sunlight and the slow progression of the disease represent the usual characteristic of this disease: this report aims to encourage surveillance in exposed workers, by the occupational physician as well as the workers, who should be properly formed and informed about this type of risk and exposure, highlighting the essential role played by prevention in tackling this disease.

The occupational physician should be able to recognize at-risk workers and monitor them over time: for example, workers exposed to direct sunlight (such as construction workers, as presented in this case report), workers with at-risk phototypes, and workers who have been exposed for many years to the same type of exposure, should be monitored more closely. As both years of exposure and age act as risk factors, a surveillance plan could also be put in place after termination of the job relationship (as established by the Italian Law 81/08).

A routine dermatological consultation should be considered in workers with a skin lesion suggestive of BCC, especially if presented with the typical features (ulcer with a raised, rounded edge; thin and prominent blood vessels around the lesion; a skin nodule, and particularly pearly or waxy nodules). A dermatological consult should also be considered in people with a skin lesion suggestive of BCC, within 2 weeks from when the lesion is first noticed, especially if the location or size of the lesion suggests that the diagnosis must not delayed [17].

CONCLUSION

Cutaneous, inflammatory, precancerous and cancerous lesions, are a group of often silent dermatological pathologies, that are not easily diagnosticated due to improper medical education, lack of symptoms, slow evolution over time and difficulty to self-monitor and self-explore, especially in some areas such as back and skull skin; these pathologies are often underestimated within workers due to an absence of information and training on risks, diagnosis and prevention.

The work fields that expose workers to direct sunlight for long periods of time are the jobs most at risk for the onset of skin neoplasms in workers. In this context, a key role is played by the occupational physician, whom – as highlighted in this case report – through a careful physical examination and an accurate work history, has framed correctly the disease and directed the worker towards the adequate medical specialist for the required investigations, so that a timely treatment was possible, and a follow-up plan was put in place to prevent the onset of recurrences, which is very frequent in this type of lesions.

It is desirable that all employers, in collaboration with their occupational physicians, ensure the physical and psychological wellbeing of workers, through appropriate and timely medical surveillance, and through the training of the workers to spread risk awareness and prevention in the workplace.

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Not applicable.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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