

## Wolf's isotopic response of basal cell carcinoma following facial herpes zoster infection: a rare presentation

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### Abstract

Basal Cell Carcinoma (BCC) is a slow growing, locally invasive tumour, which arises from pluripotent cells within the basal layer of epidermis or follicular structures, uncommon in dark skinned individuals with occurrence in females vis-à-vis males being lower.<sup>[1]</sup> Here we report a rare case of 60 year old Indian female, who presented with hyperpigmented nodules over right infra-orbital region, which was asymptomatic and had previous history of herpes zoster at the same site. Biopsy revealed the lesion to be BCC. Hence, Wolf's isotopic response is the occurrence of a new dermatosis at the site of previous herpes zoster infection. Nodular BCC comprises about 50-80% of all BCC and lesions are more frequently found on face, commonly affecting the forehead, peri-orbital area and cheeks. We further hypothesize immunological cause to lead mutations and subsequent occurrence of carcinoma and plead for further dermatological research in the same area.

**Key Words:** Basal cell carcinoma, Herpes zoster, Wolf's isotopic response.

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### Introduction

Varicella zoster and Varicella simplex viruses are epidermoneurotropic, which affect both the skin and cutaneous nerve endings. The viruses are known to activate the immune complexes in the body. The involvement of the nerve endings present in the skin, releases neuromediators, which in turn, lead to changes in immune control process.<sup>[2]</sup> This is the reason for the development of various dermatosis at the site of skin which was previously affected by Varicella virus. This leads to the development of immune related disorders in the form of infections, tumours or any other immune mediated reactions, at the previously herpes-infected site.

This phenomenon is known as Wolf's isotopic response which refers to the onset of new dermatosis at the site of previously, already healed herpetic eruption<sup>[3]</sup> and this case report follows the same phenomenon.

So, follow up is required in patients who had suffered from herpes zoster infection in the past. Such presentations appear to be rare. Hence further dermatological research with many more cases is required to study this phenomenon.

### Case Report

A 60 year old woman, being a farmer by occupation, presented to us with few hyperpigmented nodules to plaques, over left infra-orbital area since a month which was asymptomatic.

After obtaining consent from the patient, a detailed history of the patient was taken which revealed that she had presented to us 6 months back, with multiple vesicles at the same site (left infra-orbital region). She was investigated and diagnosed to have herpes zoster

infection, for which proper course of requisite treatment had been given. This lesion had healed subsequently.

Now, since she presented with an asymptomatic, rapidly expanding lesion at the same site, skin biopsy was performed. Biopsy showed moderate dermal infiltration was seen. An island of basaloid cells with palisading pattern at periphery was observed. Every cell had large, elongated, oval nucleus with scanty cytoplasm. Connective tissue stroma contains nodules, arranged as parallel bundles around tumor islands. The report was suggestive of nodulo-ulcerative Basal cell carcinoma.

On enquiry, there was no history of similar lesions in the family.

She was investigated and her haematological parameters were found to be normal. Further, radiological investigations were also found to be normal.

To treat the carcinoma, we embarked upon excision of the lesion under local anaesthesia. This was then cosmetically sutured. Marked improvement was noticed within few weeks and she completely recovered a month. Till date, there has been no relapse.

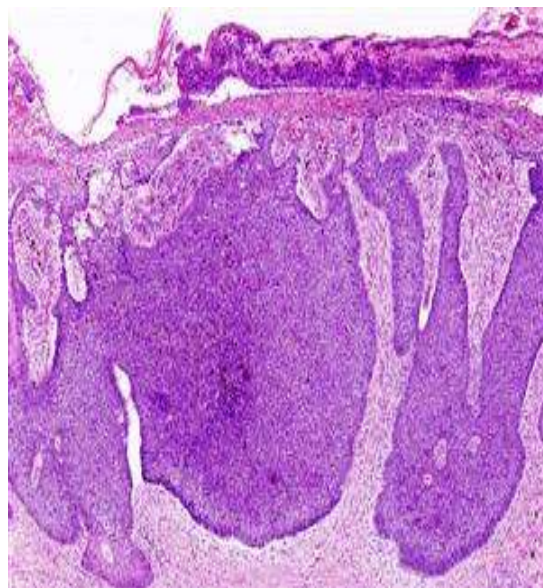


**Fig. 1**



**Fig. 2**

**Fig. 1 & 2: Showing multiple hyperpigmented, waxy papules to plaques with central depression & rolled out border, seen over left infra-orbital area**



**Fig. 3: Showing moderate dermal infiltration was seen. An island of basaloid cells with palisading pattern at periphery was observed. Every cell had large, elongated, oval nucleus with scanty cytoplasm. Connective tissue stroma contains nodules, arranged as parallel bundles around tumor islands**

### Discussion

This is a rare case as there was development of basal cell carcinoma at the site of previously healed herpes zoster infection.

Herpetic infection makes ground for a new dermatosis to occur, by altering the neurovascular mechanisms at the affected area.<sup>[4]</sup>

The new dermatosis may be anything ranging from a granulomatous reaction to a malignancy.

In Wolf's isotopic response, herpes zoster is more prevalent as compared to herpes simplex, as per the previous studies<sup>[5]</sup>

This necessitates the need for skin biopsy and prompts treatment, which was done in our case.

The reports of such cases in scientific fraternity appear to be meager and hence, comparison becomes difficult.

Appearance of a new dermatological condition at previously infected site, precisely is a dermatological puzzle, the mechanism of which needs to be solved.

We hypothesize that, there may be immunological changes after Herpes zoster infection, which may also lead to mutations that may predispose the patient to be vulnerable to develop carcinoma. Hence, watch and follow up are kept on the patients with herpetic infection.

This case report will be highly pertinent from dermatological research perspective with many similar case-series to follow it and elucidates further study on the same to uncover the cause-effect analysis. These case-series may further be studied in detail in light of our hypothesis.

**References**

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