

## Development of oral lichen planus after COVID-19 vaccination – a rare case report

To the Editor

Documentation of COVID-19 started happening around December 2019 from Wuhan, China, after which the world has been on a standstill with waves of COVID-19 virus taking millions of lives worldwide. Various companies all over the world started manufacturing COVID-19 vaccines due to the current need at an extraordinary pressing speed,<sup>1</sup> which took almost a year to be available to the Indian population.

Many manifestations of COVID-19 are seen on the skin and the mucosa including maculopapular rash, urticaria, vesicles, chilblain, petechiae, livedo reticularis and EM like lesions.

Though the side effects post vaccination are usually mild to moderate, including fever, fatigue, headache, muscle pain, chills and diarrhoea, lesser common side effects such as anaphylaxis and thrombosis have also been reported in extremely rare cases.

A 35-year-old female health care worker, with no previous history of lichen planus or oral lichen planus was referred to our dermatology outpatient department from medicine. She complained of abrupt onset of severe burning sensation while eating spicy food for 2 days. She gave a history of COVID vaccination 14 days ago.

When we asked her about any other possible trigger, she denied any history of smoking, tobacco use, drugs, recent infections etc. She had lesions bilaterally over the buccal mucosa and the gingival mucosa sparing the tongue and the palate. No relevant medical history was found.



**Figure 1** (a) Reticular oral lichen planus over right buccal mucosa. (b) Reticular oral lichen planus over left buccal mucosa. (c) Histopathological analysis showing moderately dense superficial perivascular lichenoid infiltrate of lymphocytes and plasma cells with irregular acanthosis and vacuolation of the basal layer. The dermoepidermal junction is focally infiltrated by lymphocytes and shows scattered necrotic keratinocytes (at x400, H and E).

The lesions had an erythematous base with white reticular streaks over them, some of them had erosions. A punch biopsy was taken from the lesion which proved to have histopathological findings consistent with oral lichen planus (Fig. 1).

There was no involvement of any body surface and nails. Even after follow-up at day 7 and 14, the patient did not show any signs of skin involvement.

The routine investigations were unremarkable with a negative serology for hepatitis B, hepatitis C and HIV. The patient was also subjected to RT-PCR to rule out active COVID-19 infection and which turned out to be negative. The patient also denied to any history consistent with COVID-19 infection in past.

On the basis of strong clinical suspicion and histopathological findings, the patient was diagnosed with acute onset oral lichen planus secondary to COVID-19 vaccinations.

Lichen planus is an inflammatory, chronic, T cell-mediated disease of unknown origin.<sup>2</sup> Clinically, its presentation depends on the location at which it appears, skin being the most affected, where it presents as purplish, shiny, polygonal, pruritic, flat-topped papules, also involving the skin, mucocutaneous membranes, the nails and scalp. In the oral cavity, it affects the stratified squamous epithelium exclusively and frequently affects the oral and genital mucosa. Factors which act as predisposing factors are vaccinations, drugs, stress, anxiety, infection, diabetes, hypertension, dental materials, genetic predisposition and neoplasms.

First case of lichen planus after hepatitis B vaccination was reported by Ciaccio *et al.*<sup>3</sup> After that, a handful of cases of mucocutaneous lichen planus were also reported secondary to influenza, rabies, Diphtheria, Tetanus, Pertussis (DTaP) and measles, mumps and rubella (MMR) vaccination, but most commonly after second dose of hepatitis B vaccination.<sup>4</sup> The exact mechanism responsible for this event is yet to be recognized; another case of lichen planus was recently reported by Hiltun *et al.*, after COVID vaccination (Comirnaty, Pfizer, New York, NY, USA; BioNTech, Mainz, Germany).<sup>5</sup> The exact mechanism for this event are yet to be uncovered.

However, till date no cases of oral or any other mucosal lichen planus have been reported after COVID vaccination. To the best of our knowledge, this is the first case which has been reported so far.

However COVID-19 infection itself can be a trigger for lichen planus as described by Samapika *et al.*<sup>6</sup>

The presence of stress,<sup>7</sup> owing to the current pandemic situation, itself can be a risk factor for development of oral lichen planus which though the patient denied cannot be ruled out.

The presence of COVID-19 itself as a potential trigger for oral lichen planus in our case was also ruled out. Our patient did not complain of any symptoms suggestive of COVID and her RT-PCR report was also negative; however, subclinical COVID-19 cannot be ruled out.

This disease carries a good prognosis, and the patient responded well to a short term course of steroids.

Our case exemplifies the importance of identifying COVID-19 vaccination as a potential trigger for oral lichen planus. However, at this stage, it would be premature to draw a relationship between COVID-19 vaccine and lichen planus. The vaccines are administered on a large scale and it can even be a mere coincidence. A dermatologist should be aware of the different atypical presentations after vaccinations, currently suffering from COVID-19 and thus treat and counsel the patients accordingly.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

### Conflict of interest

The authors have no financial obligations or conflict of interest to declare.

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