

LETTER TO THE EDITOR

Oral lichen planus following the administration of vector-based COVID-19 vaccine (Ad26.COV2.S)

Dear Editor,

The introduction of vaccines against COVID-19 was a pivotal step in the quest to break the global pandemic (Wouters et al., 2021). Various vaccines are currently in use (Wouters et al., 2021): viral vector (AstraZeneca, J&J, Gameleya), mRNA (Moderna, Biontech/Pfizer), and inactivated SARS-CoV-2 virus (Sinopharm). The safety and efficacy profiles of all vaccines appear to be favorable (Wu et al., 2021). Limited local reactions at the injection site are most commonly reported after the vaccine administration (Wu et al., 2021). Severe adverse events seem to be rare (0.1%) (Wu et al., 2021).

In the progress of the vaccination campaign, more knowledge about possible side effects is surfacing. It is difficult to establish causative associations between conspicuous (possibly rare) clinical findings and COVID vaccine administration (Anaya-Saavedra, 2021). However, a meticulous surveillance of possible side effects is warranted.

Cutaneous/mucosal side effects (allergic and non-allergic) in the wake of vaccinations are well described (Rosenblatt & Stein, 2015). A rare vaccination-associated event is the onset of lichen planus (LP) (Lai & Yew, 2017). A review published in 2017 found a total of 33 cases of LP arising after various vaccinations (Lai & Yew, 2017). Most cases of LP (very rarely with oral manifestations) were observed within a fortnight following a Hepatitis B, Influenza, or Herpes zoster vaccination (inactivated/attenuated virus vaccinations) (Lai & Yew, 2017).

Recently published reports have associated COVID-19 vaccinations with the emergence of LP or the exacerbation of oral LP (OLP)

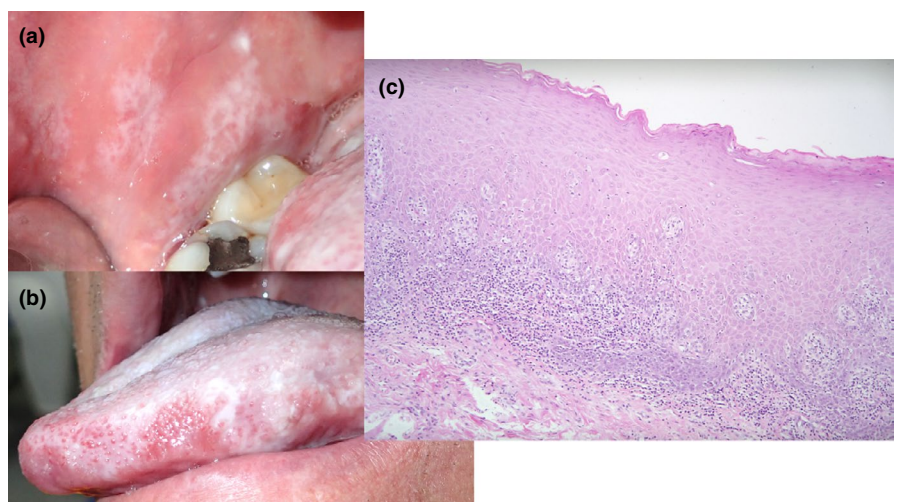
(Hiltun et al., 2021; Kulkarni & Sollecito, 2021; Merhy et al., 2021). LP and OLP are the clinical correlate of an autoimmunologic reaction of mainly CD8+ cytotoxic T cells against epidermal basal layer keratinocytes which induces keratinocyte apoptosis (Nogueira et al., 2015). This process is maintained by the release of IL-2, TNF- α , and IFN- γ by CD4+ (Th1) lymphocytes (Hiltun et al., 2021; Nogueira et al., 2015). The LP/OLP-associated immune reaction is represented histologically by the accumulation of lymphocytic infiltrates in the basal epidermal layer.

An intended effect of all COVID-19 vaccines is the broad immune system stimulation which induces a T-cell driven response with B-cell activation, antibody production, and increased levels of cytokines including IL-2, TNF- α , and IFN- γ (Alter et al., 2021). Long-lasting immunologic responses have been shown for the Ad26.COV2.S vaccine (Alter et al., 2021).

Literature searches failed to reveal descriptions of COVID-19 vaccine-associated initial manifestations of OLP without extraoral efflorescences. This may be the first report of OLP onset in a timely association with the COVID-19 vaccination (Ad26.COV2.S).

A 49-year-old male patient presented with a 9-week history of oral mucosal discomfort, burning sensations, and desquamation that had developed six days after the COVID-19 vaccination with Ad26.COV2.S. The patient had suffered from flu-like symptoms for three days immediately following the vaccination. The clinical examination showed the classical image of OLP (Figure 1). The clinical diagnosis was confirmed by a surgical biopsy. The patient was treated with a four-week course of topical clobetasol mouth

FIGURE 1 (a) Image of the right buccal mucosa showing the typical clinical OLP image of reticular white markings (Wickham striae); (b) Image of the left lateral tongue showing plaque-like OLP manifestations; (c) Histological image of the biopsy of the buccal mucosae with the linear accumulation of lymphocytes along the basal epidermal membrane with intraepidermal lymphocytic infiltrates and single necrotic keratinocytes (hematoxylin–eosin stain, magnification: 5 \times)



irrigation solution (0.5 mg/ml) which led to a significant improvement of the symptoms.

Newly arising OLP lesions have been recognized in patients suffering or convalescent from COVID-19 (Burgos-Blasco et al., 2021). However, the onset of OLP has not been associated with COVID-19 vaccinations to date. In the present case report, OLP manifested after vaccination with a vector-based COVID-19 vaccination (Ad26.COV2.S). It is plausible that a COVID-19 vaccination-induced cytokine flare might be implicated in vaccination-associated (cutaneous) side effects such as LP and OLP (Nogueira et al., 2015).

KEYWORDS

Ad26.COV2.S, COVID vaccine, COVID-19, oral lichen planus

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CONFLICT OF INTEREST

All authors affirm that they have no conflict of interest.

AUTHOR CONTRIBUTIONS

Matthias Troeltzsch: Conceptualization; Formal analysis; Investigation; Methodology; Project administration; Supervision; Validation; Visualization; Writing-original draft; Writing-review & editing. **Markus Gogl:** Investigation; Writing-review & editing. **Ronald Berndt:** Supervision; Validation; Visualization. **Markus Troeltzsch:** Writing-original draft; Writing-review & editing.

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Matthias Troeltzsch^{1,2} 

Markus Gogl²

Ronald Berndt³

Markus Troeltzsch²

¹Department of Oral and Maxillofacial Surgery and Facial Plastic Surgery, University Hospital, LMU Munich, Munich, Germany

²Center for Oral, Maxillofacial and Facial Reconstructive Surgery, Ansbach, Germany

³Department of Pathology, Ansbach General Hospital, Ansbach, Germany

Correspondence

Matthias Troeltzsch, Department of Oral and Maxillofacial Surgery and Facial Plastic Surgery, University Hospital, LMU Munich, Lindwurmstraße 2a, 80337 Munich, Germany.
Email: matthias_troeltzsch@hotmail.com

ORCID

Matthias Troeltzsch  <https://orcid.org/0000-0003-4893-4729>

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