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mRNA COVID-19 Vaccine and Oral Lichen Planus: A case report

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Dear Editor,

BNT162b2 (Comirnaty) is a vaccine against COVID-19, based on messenger RiboNucleic Acid (m-RNA) technology, capable of encoding for SARS-CoV 2 spike protein, which is responsible of viral binding to target human cells (Polack et al., 2020).

On December 10, 2020 a clinical trial, published in the New England Journal of Medicine (NEJM), reported that two-dose regimen of Comirnaty vaccine was 95% effective in preventing COVID-19 (Polack et al., 2020). However, vaccine efficacy estimate has changed in relation to the time interval from the last administration and as a result of the circulation of new viral variants (Bian et al., 2021; Fiolet et al., 2021).

Serious adverse reactions have only been reported in the 0.7% of cases; mild to moderate pain at the injection site was the most frequently self-reported local reaction, while fever and fatigue were the main systemic ones (Thomas et al., 2021).

In June 2021, a 40-year-old male complained the appearance of bilateral lesions in buccal mucosa, one month after the administration of the second dose of Comirnaty vaccine.

Oral cavity examination revealed good oral hygiene, two dental amalgam fillings on the upper first molars and confirmed the presence of keratotic reticular patches as well as of erythematous and erosive lesions on the buccal mucosa of both cheeks.

Macroscopic appearance of the oral lesions was compatible with the diagnosis of Oral Lichen Planus (OLP)**.** In order to assess the presence of systemic alterations as potential causes of the

immunological reaction, appropriate hematochemical tests were prescribed; to confirm the clinical diagnosis an incisional biopsy was performed (Alrashdan et al., 2016) (Figure 1 d). Laboratory tests, shown in Figure 1 a,b,c, resulted negative, while histopathological findings (Figure 1 e) were suggestive of OLP (Ismail et al., 2007).

In proximity to the oral mucosa, mercury or other amalgam components, may trigger a type IV/delayed hypersensitivity immune section (Alrashdan et al., 2016). For this reason, the amalgam fillings were replaced and a follow-up was scheduled.

No clinical improvement of the oral lesions was observed after 6 months, excluding the possibility that amalgam could be considered the causative antigen.

OLP is a chronic cell-mediated inflammatory reaction, where CD8 cytotoxic lymphocytes play the main role against an unknown keratinocyte antigen, which is no longer recognized as self (Edwards & Kelsch, 2002), therefore, related lesions can be considered as the expression of different diseases and several local conditions, secondary to the loss of the immunological tolerance (Ismail et al., 2007). A drug-related lichenoid reaction tends to develop from 1 month to 2 years after the first intake of the drug (Woo et al., 2009). Specific scientific evidence on post-vaccine lichenoid reactions showed that the reaction occurred with a mean time of 14 days (Lai & Yew, 2017). Given these considerations, it could be hypothesized that the inoculation of the second dose of vaccine could have triggered a cell-mediated reaction responsible for the genesis of the lesions described.

To our knowledge, although OLP has been recently related to a vector-based COVID-19 vaccination (Ad26. COV2.S) (Troeltzsch et al., 2021), no OLP lesions have ever been described in association with m-RNA vaccines and the presented case may be considered as the first report appearing in the literature. Further clinical observations and wider studies with higher scientific evidence are evidently needed to validate such a finding and the putative role of m-RNA vaccines in OLP pathogenesis.

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Conflict of interest: All the authors declare that no conflict of interest or financial relationship regarding any of the products involved in this study.
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Patients consent: Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by the Editor of this journal
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Clinical trial registration: Not applicable

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Figure 1: (a) routine blood tests, (b) inflammatory index, (c) immunological records for connective tissue disease, thyroiditis and autoimmune gastritis, d) intraoral view of the lesion, e)hyperkeratosis without dysplasia and presence of lymphocytes infiltration at basement membrane zone

TESTS REQUIRED	RESULT	NORMAL VALUE
Blood Count		
Red blood cell	5.050.000 /mmc	4.4 to 5.6 millions/mmc
White blood cell	6.650 /mmc	4.000 to 9.000 /mmc
Hemoglobin	14,3 g/dl	13 to 17
Hemoglobin %	91 %	
Ht	45,1 %	42 to 50
MCV	89,3 fl	82 to 98
MCH	28,2 pg	27 to 32
MCHC	31,6 g/dl	33 to 37
RDW	12,1 %	11 to 15
Differential white blood cell count (%)		
Neutrophils	50 %	40 to 75
Eosinophiles	5 %	1 to 5
Basophils	0 %	0 to 1
Lymphocytes	40 %	20 to 45
Monocytes	5 %	3 to 7
Differential white blood cell count (#)		
Neutrophils	3.325 /mmc	2.500 to 7.500
Eosinophiles	333 /mmc	50 to 400
Basophils	0 /mmc	0 to 100
Lymphocytes	2.660 /mmc	1.500 to 3.500
Monocytes	333 /mmc	200 to 600
Platelet	253.000 /mmc	130.000 to 400.000 /mmc
Blood type and Rh factor		
Blood type	A	
Rh factor	Positive	

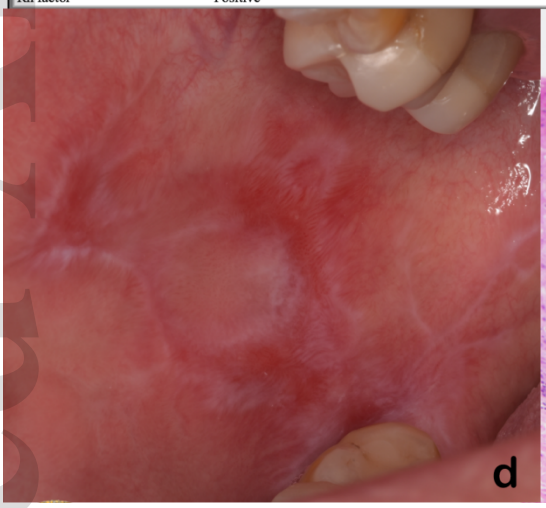
a

TESTS REQUIRED	RESULT	NORMAL VALUE
C3 complement	141 mg/dl	85 to 185
C4 complement	18 mg/dl	15 to 53
C-Reactive Protein	0,57 mg/dl	0 to 0,50
ESR (1 hour)	11 mm	0 to 20
Fibrinogen	306 mg/dl	200 to 400
Anti-Helic. Pylori antibodies IgG	13,2 U/ml	< 20 = negative
Treponema: VDRL	Negative	Negative

b

TESTS REQUIRED	RESULT	NORMAL VALUE
Rheumatoid factor	10,3 U/ml	< 25,0
TSH	2,097 µIU/ml	0,350 to 4,940
FT3	3,16 pg/ml	1,58 to 3,91
FT4	1,42 ng/dl	0,70 to 1,48
Antimitochondrial antibodies	< 1:10	< 1:10
Anti-DNA ds antibodies	1,4 U/ml	< 20
Anti-nuclear antibodies		
Anti – SS-A	Absent	Absent
Anti – Ro-52	Absent	Absent
Anti – SS-B	Absent	Absent
Anti – nRNP/Sm	Absent	Absent
Anti – Sm	Absent	Absent
Anti – Jo-1	Absent	Absent
Anti – SCL-70	Absent	Absent

c



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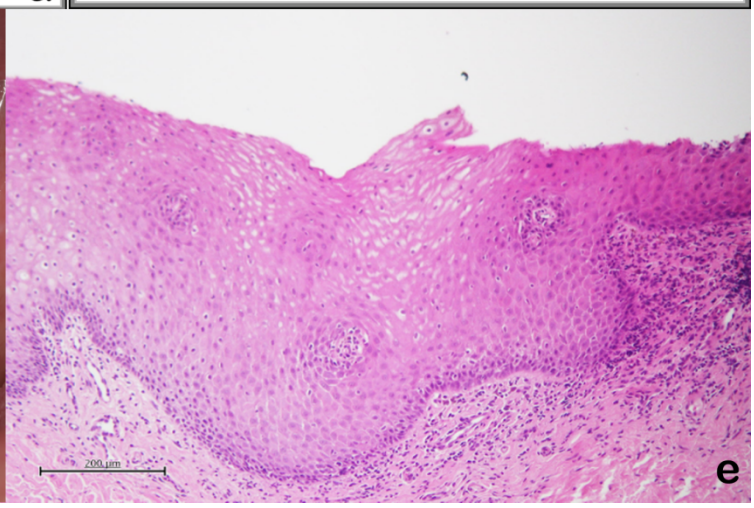

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