

# Angular cheilitis of COVID-19 patients: A case-series and literature review

Dear Editor,

We have read with great interest the correspondence of Rodríguez et al. (2020) which demonstrated angular cheilitis (AC) in two patients of coronavirus disease (COVID-19) (Díaz Rodríguez et al., 2020). Therefore, we aim to report according to the CARE guidelines, a series of 17 laboratory-confirmed COVID-19 patients with AC (Gagnier et al., 2013).

The referenced patients sought care at our department from April to June 2020 due to pain related to either one or both oral commissures. All included patients had previously undergone a polymerase chain reaction (PCR) testing for SARS-COV-2, which confirmed their infection with a mean cycle threshold (Ct) value of  $28.71 \pm 5.22$  (17–34). Their mean age was  $39.94 \pm 13$  (20–64) years old, and twelve (70.6%) of them were females. In regard to the characteristic symptoms of COVID-19, four patients (23.5%) had persistent fever, three patients (17.6%) had pharyngitis, and two patients (11.8%) had ageusia. While one patient (5.9%) had lost the mandibular first molar, one patient (5.9%) had reported bruxism previously, and two patients (11.8%) had presented signs of dental attrition. All patients complained of excessive salivation during the preceding days of their examination.

Clinical examination has revealed reddish swollen patches corresponding to AC found unilaterally on the left commissure of 11 patients (64.7%), the right commissure of four patients (23.5%), and bilaterally in two patients (11.8%). The day of PCR testing was set as a reference time point for estimating the onset of AC. The mean onset of AC was  $1.82 \pm 0.95$  (0–3) days, and the mean duration was  $3.35 \pm 1.77$  (2–8) days. Five patients (29.4%) had generalized cheilitis in addition to AC. The pain severity was subjectively assessed by the patients using an 11-item numerical rating scale (NRS) when with “0” denoting “no pain” and “10” denoting “pain as bad as you can imagine” (Williamson & Hoggart, 2005). The mean pain severity was  $5.06 \pm 1.89$  (2–9), and the mean pain duration was  $2.41 \pm 0.87$  (2–5) days. The patients received symptomatic treatment, including mouthwash of Chlorhexidine Gluconate 0.3% and antifungal ointment of Nystatin to ease their pain.

The statistical analysis revealed that age and gender did not have a significant association with any of the clinical or laboratory variables. The duration of pain was strongly correlated with pain severity and the duration of AC until its complete recovery (*Pearson Correlation* = .526, and .625;  $p = .030$ , and  $.007$ , respectively). All the investigated patients agreed to use their clinical and laboratory results for academic purposes while concealing their identifying personal data.

Our findings rule out the possibility of decreased vertical dimension as a local factor for developing AC; because the majority of our patients had their first molars in occlusion and did not present signs of bruxism or dental attrition. The increased expression of angiotensin-converting enzyme II (ACE2) in salivary glands underpinned by the high positivity of salivary samples for SARS-COV-2 can cause salivary glands disorders such as acute parotitis which may affect the salivary consistency in terms of increased serous secretion and enzyme content (Riad et al., 2020). However, there is a lack of evidence on salivary consistency and flow of COVID-19 patients, the increased salivation reported by our patients might cause AC as the salivary enzymes can irritate the skin of the mouth corners leading to maceration and digestion. (Park et al., 2011).

On reviewing the emerging evidence of cheilitis in relation to COVID-19, twenty-six patients were reported to have various types of cheilitis. In Moscow, Khabadze et al. (2020) demonstrated that out of 90 hospitalized COVID-19 patients with oral mucocutaneous manifestations, there were 21 patients (23.3%) presented with AC associated in some of them with facial xeroderma and petechiae of buccal mucosa (Khabadze et al., 2020). In the case-series of Rodríguez et al. (2020), a 53-year-old male patient reported burning sensation with unilateral AC complicated by persistent anosmia and dysgeusia that lasted even after the relief of AC. There was also a 78-year-old hospitalized female with AC associated with pseudomembranous candidiasis lesions on the tongue and palate (Díaz Rodríguez et al., 2020). The youngest case was reported in Italy, for a 9-year-old Down's syndrome male patient who complained of symptomatic glossitis adjacent to mild cheilitis while being SARS-COV-2 positive (Mazzotta et al., 2020). Alsibai et al. (2020) described pustular, erythematous rash on the upper trunk in association with cheilitis in a 66-year-old recently recovered female patient (Drak Alsibai et al., 2020). A rare adult patient with Kawasaki-like multisystem inflammatory syndrome had cheilitis associated with left neck swelling, periorbital edema, and targetoid erythematous while being SARS-COV-2 positive (Shaigany et al., 2020).

Cheilitis and strawberry tongue were frequently observed in the pediatric patients diagnosed of Kawasaki-like multisystem inflammatory syndrome; therefore, dentists and pediatric dentists are supposed to pay attention to these alarming manifestations as they may help in early diagnosis of these patients (Riad et al., 2020). Moreover, COVID-19 can cause cheilitis indirectly; a cross-sectional study for frontline healthcare workers revealed that due to the excessive use

of personal protective equipment (PPE), cheilitis simplex was the most common pattern (63.64%), followed by AC (36.36%) (Singh et al., 2020).

To conclude, AC of COVID-19 patients can be attributed to numerous local irritants, including hypersalivation. Further epidemiologic studies are warranted to investigate the potential predisposing factors for AC emergence in COVID-19 patients.

### CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

### AUTHOR CONTRIBUTIONS

**Islam Kassem:** Data curation; Investigation. **Julien Issa:** Writing-original draft. **Mai Badrah:** Formal analysis. **Miloslav Klugar:** Supervision; Writing-review & editing.


### PEER REVIEW

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