Oral mucosal burns can occur after contact with various chemical agents, and commonly manifest as areas of mucosal sloughing and ulceration. Policresulen (Albothyl, Celltrion Pharm Inc.) is an over-the-counter topical antiseptic that is frequently used to treat stomatitis. Policresulen solution is highly acidic, with an approximate pH of 0.6; it can thus cause mucosal injury when improperly applied in the oral cavity. Here, we present a rare case of an oral mucosal burn resulting from incorrect self-administration of policresulen and emphasize the importance of increasing understanding of this adverse drug event among consumers and health professionals.

Keywords: Chemical burns; Oral mucosa; Policresulen; Self-treatment

Case report

Oral chemical burns caused by topical application of policresulen: a case report

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Case

Ethical statements: This study was approved by the Institutional Review Board (IRB) of Daegu Catholic University Medical Center (IRB No: CR-22-089-L). The requirement for written informed consent from the patient was waived by the IRB.

A 61-year-old man with a 3-month history of severe pain caused by ulceration of the right maxillary buccal vestibule was referred to the Department of Dentistry, Daegu Catholic University Medical Center by a local clinician. The oral lesion had developed after the
Patient started wearing a new maxillary complete denture. He had undergone denture adjustment several times and was prescribed nonsteroidal anti-inflammatory drugs and antibiotics; however, his symptoms gradually worsened. The patient was therefore referred for evaluation and treatment of a refractory ulcerative lesion, which was suspected to be malignant. The patient had no significant relevant medical history.

Intraoral examination revealed a mucosal ulcer in the right maxillary buccal vestibule covered with a necrotic, sloughing pseudomembrane, which was painful on palpation (Fig. 1). Mechanical irritation by the buccal flange of the maxillary denture was not observed (Fig. 2), and there was no evidence of any other definite lesion in the oral cavity. On questioning, the patient disclosed that he had been applying Albothyl topically to the affected area for approximately 3 months to alleviate pain from a traumatic ulcer. Panoramic radiography revealed no remarkable findings (Fig. 3).

Based on the appearance of the lesion and clinical history, we diagnosed the patient with an oral mucosal chemical burn resulting from the misuse of policresulen. Other abnormal conditions, including squamous cell carcinoma or deep fungal infection, were included in the differential diagnosis but were considered less likely. The patient was instructed to discontinue the use of Albothyl in his vestibule because of its deleterious effect on the oral soft tissue, and was treated with a combined topical regimen of corticosteroids and antibiotics (prednisolone 0.3 mg and amoxicillin 10 mg in 5 mL of water as a mouthwash, three times a day). The patient did not attend his 1-week recall appointment but reported remarkable improvement in symptoms during the follow-up phone call. At the 2-week review, the patient reported no pain, and clinical examination revealed almost complete resolution of the oral lesion (Fig. 4).

Discussion

Policresulen is a polymolecular organic acid that is produced by the condensation reaction between metacresol sulfonic acid and

Fig. 1. Clinical photograph shows mucosal ulcer covered with a necrotic, sloughing pseudomembrane in the right maxillary buccal vestibule.

Fig. 2. Clinical photograph shows the oral lesion with the maxillary denture in place.

Fig. 3. Panoramic radiography demonstrates no remarkable findings.

Fig. 4. Clinical photograph shows regression of the lesion following treatment.
formaldehyde [4,6]. Policresulen is a commonly used topical anti-
septic, which topped the Korean stomatitis drugs market with a
28.7% share in 2020. Although policresulen is indicated for the
treatment of stomatitis and bacterial vaginosis, it is contraindicated
in patients with hypersensitivity to any of the drug components.
Policresulen causes selective coagulation of damaged tissues, while
leaving normal tissues unharmed, allowing rapid reepithelialization
[4,5]. This drug also has antimicrobial, astringent, and anti-inflam-
matory properties [4]. According to the manufacturer’s instruc-
tions, when used to treat stomatitis, a policresulen solution should
be applied cautiously to the affected area using a cotton swab.
Then, a thorough mouth rinse with water is required to remove the
residual substance. Improper use of this agent can induce epithelial
necrosis and subsequent development of white sloughing pseudo-
membranes covering the underlying ulceration. Additionally, it
may cause erosion of the tooth enamel owing to its high acidity
(pH 0.6). To the best of our knowledge, very few cases of oral mu-
cosal burns resulting from topical application of policresulen have
been reported in the literature [6]. Although the mechanism by
which policresulen causes oral mucosal damage is still unclear, or-
ganic and inorganic acids are known to denature epithelium pro-
teins, triggering coagulative necrosis of cells [1]. Therefore, it is
reasonable to assume that the mucosal burn could probably be at-
tributed to tissue protein denaturation caused by policresulen.

Exposure to a wide variety of chemicals may lead to soft tissue
injuries in the oral mucosa. Agents associated with oral mucosal
damage include dental materials (e.g., phosphoric acid etching
solutions, ferric sulfate, calcium hydroxide, sodium hypochlorite,
hydrofluoric acid, and formocresol), medications (e.g., aspirin and
alendronate), non-pharmaceutical substances (e.g., mouthwashes,
hydrogen peroxide, denture cleansers, and garlic), and illicit drugs
(e.g., cocaine and amphetamine) [1,7-17]. Chemical burns can oc-
cur at any oral mucosal site, but the labial and buccal mucosae are
the most commonly affected [1]. The severity of the oral mucosal
injury depends upon multiple factors, including the pH and con-
centration of the substance, the amount of the agents, duration of
exposure, and mechanism of action [2].

A diagnosis of oral chemical burns is usually made based on the
clinical history and physical examination, and comprehensive his-
tory taking is important to identify the causative agent. Contact
with a potentially harmful agent causes oral mucosal erythema and
subsequent development of necrotic, sloughing pseudomem-
branes covering the underlying ulceration [1,16]. Biopsy of the
oral lesion is rarely required unless a patient’s history is difficult to
obtain or appears to be intentionally misleading. Histopathological
examination of chemical burns generally reveals areas of focal co-
agulative necrosis of the epithelium, subepithelial inflammatory
cell infiltrate, and ulceration; however, these findings are not
pathognomonic [1,16].

Successful treatment of oral mucosal chemical burns depends
on the identification and withdrawal of causative agents. Patient
education is crucial in preventing mucosal trauma due to improper
use of various chemical agents. Chemical burns usually present as
mild to moderate mucosal damage which resolves spontaneously
within 7 to 15 days; thus, only supportive care is required in many
cases [18]. However, in cases of more severe mucosal injury, the
application of topical corticosteroids may be beneficial [19]. Tis-
tue destruction due to massive exposure to corrosive agents may
require surgical debridement and antibiotic administration [1,16].

Policresulen is an over-the-counter topical medication that is
used to treat stomatitis. As inadequate self-treatment with this
agent may lead to oral soft tissue injury, taking a detailed clinical
history and providing appropriate patient education is of great im-
portance to clinicians. Policresulen-induced mucosal burns should
be included in the differential diagnosis of oral ulceration and ne-
ecrotic tissue, and there is also a need to raise awareness of this ad-
verse drug event in consumers and health professionals.

Notes

Conflicts of interest
No potential conflict of interest relevant to this article was report-
ed.

Funding
None.

Author contributions
Conceptualization, Formal analysis: HSC, SK; Data curation, Vi-
sualization: HSC; Supervision: SK; Writing-original draft: HSC;
Writing-review & editing: HSC, SK.

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https://doi.org/10.12701/jyms.2022.00472


