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Case Report

Captopril-induced sialadenitis in a patient with end-stage renal disease

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ABSTRACT

Sialadenitis is a rare adverse effect of captopril. We report a case of captopril-induced sialadenitis in a patient with end-stage renal disease (ESRD). A 20-year-old man with ESRD encountered parotid and submandibular swelling after receiving two doses of captopril, administered sublingually. Despite of prescribing dexamethasone, resuming hemodialysis, and discontinuing other drugs that also can cause parotitis, he improved later than what was reported in patients with normal renal function. In conclusion recovery from captopril-induced sialadenitis in patients with ESRD may be more prolonged than that of patients with normal renal function; moreover, early hemodialysis which helps in drug removal may be the most effective treatment.

Keywords: Captopril; end-stage renal disease; sialadenitis

INTRODUCTION

Inflammation and swelling of salivary glands is called sialadenitis which can be unilateral or bilateral. Many conditions such as bacterial and viral infections, sjogren syndrome, ductal obstruction by stones, tumors or duct stricture, and drugs can cause sialadenitis.[1] Although there are numerous reports of drug-induced parotitis, this is not a common phenomenon.[2] Angiotensin-converting enzyme inhibitors (ACEIs) are among drugs that have been reported in the literature as causes of sialadenitis which include two cases of captopril-induced parotid and submandibular swelling,[3] one case of enalaprilat[4] and one case of ramipril induced parotitis.[5] It should be noted that all cases were patients with normal renal function.

In this article, we describe the first report of captopril-induced parotid and submandibular swelling in a patient with end-stage renal disease (ESRD) whose sialadenitis duration was longer than that of other cases of parotitis induced by this drug or other ACEIs.[3-5]

CASE REPORT

A 20-year-old man with ESRD was admitted to our hospital because of a double lumen catheter infection. Prescribed drugs during the admission course were teicoplanin, meropenem, amikacin, sevelamer hydrochloride, furosemide, losartan, prazosin, amlodipine, and recombinant human erythropoietin. In the early morning of the 15th day of the admission, he experienced a blood pressure (BP) crisis which was controlled by 25 mg of captopril administered sublingually. Nine hours later, BP rose again and captopril was prescribed at 25 mg again. Three hours after that, patient experienced a bilateral parotid and submandibular enlargement without any pain, purulent salivary discharge, skin rash, pruritus, wheezing,

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tachypnea, and dyspnea. His lungs were bilateral clear to auscultation, and the arterial saturation of oxygen was 94%. Ultrasound imaging showed severe bilateral parotid and submandibular edema without any mass, collection, abscess, or intravascular thrombosis. We may rule out mumps because we did not have facilities to measure mumps virus-specific antibodies and only relied on the patient positive history of the infection in childhood which causes lifelong immunity.[6] Moreover, other viral infections were ruled out because the patient had no pain and no prodromal systemic symptoms such as myalgia, arthralgia, headache, and anorexia. Being under treatment of broad spectrum antibiotics and having no purulent salivary discharge made bacterial infection as a very unlikely cause. As a result, captopril was recognized as the most likely cause of the sialadenitis and was withdrawn. Despite discontinuation of captopril, enlargement of the glands was progressive, and the patient was intubated at night, and transferred to the Intensive Care Unit (ICU). Dexamethasone 8 mg 3 times per day, propofol, midazolam, morphine, and haloperidol were added to his drug regimen in the ICU. Fortunately, increase in the size of the glands stopped in the 1st day in the ICU, but the size of the glands did not reduce. We related the delay in improvement to two causes which were the administration of morphine and midazolam and resuming hemodialysis 48 h after the occurrence of parotitis. Since there are case reports of midazolam[7] and morphine[8] induced parotitis, it was suggested that stopping administration of these drugs may be helpful. However, because the patient struggled to extubate himself in the conscious state, only morphine was discontinued. Delayed hemodialysis may cause prolongation of effects of captopril, which is primarily eliminated via kidneys, and 35–40% of the blood concentration of captopril are removed in each hemodialysis session.[9,10] Eventually, 5 days after the discontinuation of captopril, the size of the glands reduced, and the patient was extubated. Calculated score of the Naranjo Adverse Drug Reaction Probability Scale[11] in this case was 7 which represents a probable casualty relationship between captopril and sialadenitis.

DISCUSSION

Based on our knowledge, it is the first report of parotid and submandibular swelling due to captopril in an ESRD patient who had no previous history of consuming any ACEI; moreover, this case is unique because of the long duration of recovery from this adverse drug reaction.

In all of the previously reported cases parotitis disappeared several hours after discontinuation of culprit drug without any further intervention, except for prescription of hydrocortisone in the case of enalaprilat induced parotitis, but in the present case the size of the salivary glands decreased nearly 5 days after the administration of captopril, and dexamethasone was also administered. We attributed this prolonged time of recovery to the renal failure which increases elimination half-life of captopril, delayed hemodialysis, and administration of other drugs that may cause parotitis such as morphine and midazolam.[2,7,8]

Underlying mechanism of this adverse drug reaction is not clearly known. Moss *et al*. suggested that parotitis may be a sign of the ACEIs induced angioedema.[5] In contrast, da saliva related captopril-induced sialadenitis to a type B idiosyncratic reaction. Since renal impairment and a postponed hemodialysis session, likely prolonged recovery time of sialadenitis in the present case, we suggest that this adverse drug reaction may be a concentration dependent phenomenon.

Clinicians should be aware that recovery from captopril-induced sialadenitis in patients with renal failure may need several days. Furthermore, early hemodialysis is the most effective treatment option, and more than one hemodialysis session may be required to accelerate the improvement of sialadenitis.

AUTHORS' CONTRIBUTION

Fatemeh Musavi Mahdiabadi: Case presentation, interpretation of data, critical revision of the manuscript for important intellectual content and final approval of the version to be published. Naemeh Nikvarz: Case presentation, interpretation of data, drafting of the manuscript, critical revision of the manuscript for important intellectual content and final approval of the version to be published.

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Conflicts of interest
There are no conflicts of interest.

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