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Attempted Suicide with Enalapril: A Rare Case of Poisoning

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Abstract: Enalapril is an angiotensin converting enzyme inhibitor. It is used in the treatment of hypertension and ischemic heart disease. Self poisoning with enalapril is very rare. We describe a case of attempted suicide by consumption of enalapril tablets. Patient recovered without any sequel.
Keywords: Aldosterone, Angiotensin converting enzyme inhibitors, Enalapril.

INTRODUCTION

Enalapril (MK-421; ethyl ester of N-[(s)-l-(ethoxycarbonyl)-3-phenylpropyl]-L-alanyl- L-proline) is a long acting inhibitor of angiotensin converting enzyme that is used in the treatment of hypertension [1]. The drug is safe in the usual therapeutic doses. Long term blockade of the renin angiotensin system with this agent is usually well tolerated [2]. In India little information has been available on the effects of acute overdosage. However we recently saw a patient who tried to commit suicide by ingesting larger doses of enalapril.

CASE REPORT

The patient was a 27 year old female without any complaints and diseases attempted to commit suicide by ingesting 200mg (10mgx20 tablets) of enalapril tablets. The tablets were her mother's, who is a hypertensive. On admission, four hours after the ingestion of the drug, the patient was completely conscious and her blood pressure was 120/70mmhg and systemic examination was normal. Urea, serum creatinine, electrolytes, complete hemogram, liver function test, random blood sugar, electrocardiogram, echocardiogram, and chest radiograph on admission were normal. Patient was given nasogastric lavage with normal saline. During the subsequent hours blood pressure oscillated around 100-70/50-60mmhg. After infusion of 4000ml sodium chloride 0.9% blood pressure rose to 110/70mmmhg,within the first 24hours after admission. She later took her own discharge after 5 days of uneventful observation .Her blood pressure was 120/70mmhg when she left the hospital. Laboratory profiles remained normal throughout the observation period after drug over dosage. The serum concentration of enalaprilic acid, plasma angiotensin II concentration and plasma angiotensin converting enzyme activity could not be done due to patient refusal for these tests.

DISCUSSION

Angiotensin converting enzyme (ACE) inhibitors like enalapril, lisinopril, ramipril, benazepril, and captopril block the conversion of angiotensin I to angiotensin II. Thereby lowering arteriolar resistance and subsequently reducing blood pressure. Enalapril is a potent long acting ACE inhibitor that has to be hydrolysed in vivo to its active metabolite enalaprilic acid [2]. Mild toxicity may be produced with a single, supra-therapeutic dose. However, severe toxic effects and deaths rarely occur and are often attributed to co-ingestants.

It's well known that cough, angioedema and bronchoconstriction are adverse effects with therapeutic use of ACE inhibitors. However, the primary toxic effect of ACE inhibitors in overdoses is hypotension which is an extension of their pharmacologic effect [3]. Aldosterone promotes excretion of potassium. Because ACE inhibitors decrease the release of aldosterone, potassium may accumulate in the body causing clinically significant hyperkalemia. Potassium retention enhances sodium excretion producing hyponatremia. Acute renal failure has rarely been reported in hypotensive patients. Monitoring of blood urea nitrogen and serum creatinine is important, particularly if significant hypotension is present or if the patient has preexisting renal disease, congestive heart failure or hypovolemia.

Asymptomatic patients should be observed for at least four hours post ingestion with frequent monitoring of vital signs. Symptomatic or hypotensive patients should be admitted for at least 24 hours post ingestion or until symptoms have completely resolved.

Patients should be given adequate IV fluids to maintain a satisfactory blood pressure and a good urine output [4]. Oral activated charcoal may be given to patients who have ingested a large overdose and if they present within 1-2 hours.

ACE inhibitors may also inhibit the metabolism of enkephalins and potentiate their opioid effect which includes lowering of blood pressure. Naloxone an opioid receptor antagonist, has been shown to increase blood pressure in ACE inhibitor overdoses [5].Although the role of naloxone in the setting of ACE inhibitor overdose remains unclear, it may be considered especially in cases of severe hypotension where fluid overload is a concern.

Over dosage of enalapril can cause profound hypotension concomitant with blockade of rennin angiotensin system. Previous patients with angiotensin converting enzyme (ACE) inhibitor overdoses have been treated in differing ways including haemodialysis and naloxone with variable success. Simple fluid infusion either alone or in combination with a low dose of dopamine has been shown to be an effective treatment [4].

In our case over dosage with enalapril did not cause any serious complications. The hypotensive episode shortly after over dosage was well tolerated and easily reversed by supportive infusion of fluid.

To conclude, the enalapril poisoning can be managed in rural hospital with supportive therapy and more Indian studies needed on this type of poisoning.

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The patient consent was received for this case report to be published.

REFERENCES

1. Gavras H, Biollaz J, Waeber B, Brunner HR, Gavras I, Davies RO; Antihypertensive effect of the new oral of angiotensin converting enzyme inhibitor “MK-421”. Lancet ,1981; 318(8246):543-547.
2. Waeber B, Nussberger J, Brunner HR; Self poisoning with enalapril. Br Med J., 1984; 288((6413): 287-288.
3. Varughese A, Taylor AA, Nelson EB; Consequences of angiotensin-converting enzyme inhibitor overdose. Am J Hypertension, 1989; 2(1): 355-357.
4. Newby DE, Lee MR, Gray AJ, Boon NA; Enalapril overdose and the corrective effect of intravenous angiotensin II. Br J Clin Pharmacol., 1995; 40(1): 103-104.
5. Ajavi AA, Campbell BC, Rubin PC, Reid JL; Effects of naloxone on the actions of captopril. Clin Pharmacol Ther., 1985; 38(5): 560-565.