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CASE SERIES: MOXIFLOXACIN INDUCED HYPOTENSION IN ISCHEMIC HEART PATIENTS

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ABSTRACT

This report represents case series of two severe hypotension and mild allergic reactions associated with oral use of single moxifloxacin tablet 400 mg in known ischemic heart patients. A-60-year old man was received in emergency department of district headquarter hospital with symptoms of dizziness, severe sweating, rashes and itching. These signs and symptoms developed ten minutes after oral intake of tablet moxifloxacin 400 mg. Blood pressure of patient was 100/70 mmHg. A second case of moxifloxacin related syncope developed to 61-year old physician was spontaneously reported by himself. He developed itching, dizziness, chest pain, followed by fell down and got unconscious in 30 minutes after oral intake of 400 mg moxifloxacin tablet. Patient was brought to emergency of a teaching hospital. Blood pressure of patient was 100/65 mmHg. He was also a patient of ischemic heart disease, hypertension and undergone coronary artery bypass grafting (CABG) two years ago. As per FDA guidelines, both of the cases were examples of serious adverse drug events and were certain as per WHO/UMC categorization of adverse drug reactions.

Key words: Moxifloxacin, Hypotension, Hospital, Cardiovascular, Patient

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INTRODUCTION

Cardiovascular disease (CVD) is spreading in the world on high scale. Diversion of life style from natural one (normal diet) to artificial one (junk foods), is resulting in the worsening the health status of common people **[1]**.CVDs are the leading cause of death worldwide. There were 17.9 million deaths (32.1%) in 2015 due to cardiovascular issues. In 1990, 12.3 million (25.8%) deaths occurred due to heart related diseases globally. Deaths, at a given age, from CVD are more common and continued increasing in developing world. While mortality rates due to CVD have been declined in most of the developed world since 1970s. Coronary artery disease and stroke account for 80% of CVD deaths in males and 75% of CVD deaths in females **[2, 3]**.

There are many tests that are being advised by healthcare providers for detection and confirmation of cardiac abnormalities. These test start from biochemical profile to radiological tests which give the confirmation of the presence of particular disease and stratification for a particular condition **[4]**. First most commonly adopted modality is electrocardiogram (ECG) which suggest abnormal functioning of heart, which further steps ahead to electroencephalography (EEG), echocardiogram (ECHO) and angiography.

Once a specific diagnosis is confirmed that patient is advised to go for surgical or medicine therapy **[5]**.Many types of interventions are involved in patients who have been reported with the cardiac issue. These interventions range from non-invasive

(angioplasty) to invasive techniques like; coronary artery bypass grafting (CABG). After the invasive procedures, patients are usually advised antibiotics starting from narrow to broad spectrum regimes **[6]**. However, these antibiotics are associated with multiple comorbidities. One of the potential salts is moxifloxacin which could be a cause of hypotension. Most commonly, the patients with respiratory distress syndrome were suffered of the moxifloxacin induced hypotension. Like other fluoroquinolone antibacterials, moxifloxacin is associated with a low risk of adverse drug reactions. Only nausea and diarrhea occurred in more than 5% of moxifloxacin-treated patients. In clinical trials and post marketing surveillance, moxifloxacin did not produce a greater-than-expected incidence of hepatic toxicity, photo toxicity, tendon rupture, arthropathy, or vasculitis. Although moxifloxacin modestly prolongs the corrected QT (QTc) interval however, comprehensive evaluations have revealed no evidence of clinical consequences, even in patients with cardiac risk factors **[7]**.

Cardiac Safety of moxifloxacin is an area of concern for it has the potential effect on cardiac tissues, in particular the development of torsades de pointes (TDP), a rare but potentially fatal arrhythmia. Antibiotic-induced prolongations of the QTc interval have received much attention. The QT interval on the electrocardiogram (ECG) is the point from the beginning of ventricular depolarization through the end of repolarization; this interval varies inversely with heart rate. The "corrected" QT interval, or QTc, controls for variation in heart rate **[8]**.

Previously published literature of moxifloxacin related adverse drug reactions do not describe any association with cardiovascular diseases. But recently, we have observed two different cases of itching, dizziness, syncope and even fall down of ischemic heart patients after oral intake of single moxifloxacin 400 mg tablet. As far literature survey is concerned these incidences are serious and may be new findings. These cases suggest being careful while prescribing or using moxifloxacin in ischemic heart patients.

Case-I Presentation

A male patient, 60-years old was received in emergency department of District Headquarter Hospital (DHQ) Sheikhupura. The case was presented to Pharmacy & Pharmacovigilance Division, Provincial Drug Control Unit (PDCU), Primary & Secondary Healthcare Department (P&SHD), Government of the Punjab through our online google form by our Clinical Pharmacy & Pharmacovigilance Officer (CPPO).The patient was presented with symptoms of dizziness, severe sweating, rashes and low blood pressure. These symptoms appear ten minutes after intake of single oral moxifloxacin 400 mg tablets wallowed with water. Moxifloxacin was used to treat chest infection (Bronchitis).The patient is a known case of ischemic heart disease. Blood sugar of patient determined in hospital was146 mg/dL. Blood pressure of patient measured in emergency was 100/70. Patient has used other quinolone drugs like ciprofloxacin and levofloxacin previously in life and did not develop any therapeutic problem. In emergency, patient was treated with injection pheniramine maleate 22.7mg, dexamethasone 4mg/ml and hydrocortisone 250mg intravenously stat. Patient got stable in few minutes after treatment. Afterwards the patient was discharged. Patient was admitted, treated, recovered and discharged from hospital emergency on same day. Adverse drug reaction was serious and certain, because no other factor could explain this incident.

Case-II Presentation

A second case of moxifiloxacin induced hypotension crisis in ischemic heart patient was reportedspontaneously to Pharmacy & Pharmacovigilance Division, Provincial, PDCU, P&SHD, Government of the Punjab through our online google form by a physician (Professor of medicine)61-years old, male who himself swallowed tablet moxifloxacin 400mg. He swallowed singlemoxifloxacin 400 mg tablet to treat infection of upper respiratory tract. Patient developed itching and hypotension in 30 minutes after intake of moxifloxacin tablet followed by, chest pain, fall down and unconsciousness (syncope). Patient was presented in emergency of Sahara Medical College Hospital Narowal in ambulance. The patient was a known case of hypertension and ischemic heart disease. Two years ago, patient had undergone coronary artery bypass grafting (CABG). Following injectables; pheniramine maleate, dexamethasone, hydrocortisone and diclofenac sodium were administered intravenously. Patient recovered from hypotension crisis in few hours after treatment and got stabilized. Later on patient was discharged from hospital on same day after recovery. Again this adverse drug related incident was serious and certain.

DISCUSSION

Our centre received two cases of mild itching and syncope followed by single oral administration of 400mg tablet of moxifloxacin. Interestingly, both of the patients had a history of ischemic heart disease. Both of two reports were furnished from different areas and hospitals situated in Punjab. Both of the patients swallowed tablet moxifloxacin 400mg orally manufactured from different firms. Moxifloxacin is relatively a new quinolone introduced to inhibit growth of a broad range of bacteria. As for our information is concerned no such reports regarding induction of syncope in cardiovascular patients after intake of moxifloxacin are available in literature. Some studies are available that moxifloxacin can increase heart rate in healthy individuals significantly**[9]**.However, these two cases described in this series were new types of effects observed after intake of single tablet moxifloxacin 400mg in patients with ischemic heart disease. Both of these two events were serious and life threatening. Event time relationship was plausible. Adverse drug reaction was categorized as per WHO causality assessment criteria and was classified as, “Certain”. This was a serious event associated with use of single oral tablet of moxifloxacin 400 mg in known ischemic heart patients. Patients have to be brought to emergency department to treat moxifloxacin related itching and syncope. These two types of reactions may be a new type of anaphylactoid reactions associated with oral intake of moxifloxacin that raises significant morbidity due to hypotension and syncope in ischemic heart patients. After symptomatic treatment both of patients were stabilized and recovered in emergency departments.

COMPETING INTERESTS None

CONCLUSION

- Moxifloaxacin 400 mg single oral dose can induce syncope in ischemic heart patients.
- Ischemic heart patients should be monitored closely when seeking treatment with moxifloxacin or should be recommended some alternate option.
- Drugs despite numerous benefits may induce diseases and should always be used under medical advice.
- In case of adverse drug reaction, consult your pharmacist or physician or discuss with Clinical Pharmacy & Pharmacovigilance Officer (CPPO).

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