

Analgesic Nephropathy: A neglected cause of Chronic Kidney Disease

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ABSTRACT

Introduction: Analgesic nephropathy is a preventable cause of chronic renal failure that occurs due to excessive use of over the counter (OTC) analgesics. Misuse or long term use of OTCs' without prior consultation from any healthcare professional leads to serious health problems.

Case presentation: Current is the case of a 48 years old woman who was presented to hospital complaining of high blood pressure and breathlessness. Patient was neither diabetic nor hypertensive. Upon examination, it was revealed that she is suffering from analgesic nephropathy due to long term use of Ibuprofen for her knee pain. Patient was diagnosed with chronic renal failure with associated hypertension.

Conclusion: Long term use of OTCs' without prior consultation of healthcare providers may lead to serious unwanted side effects and complications. Misuse of such medications should be strictly discouraged and such patients should be encouraged to undergo renal screening tests as early as possible.

INTRODUCTION

Chronic kidney disease is a major health concern and is one of the most rapidly escalating non-communicable diseases. Although, diabetes mellitus and hypertension are well documented risk factors that makes an individual susceptible to CKD but still there are certain other causes of CKD that have been neglected over years. One such preventable yet prevalent cause of CKD is analgesic nephropathy.

The term analgesic nephropathy refers to loss of kidney function due to excessive use of analgesics especially over the counter (OTC) analgesics (1). Although, CKD caused by analgesics is reversible (if detected earlier) but in certain extreme cases, kidney dysfunction is permanent with dialysis or transplantation the only solution for restoring renal function. There is no particular treatment for analgesic nephropathy.

Mostly the first and most important step in management of such patients' is discontinuation of such medication accompanied by supportive therapy such as modification in life style i.e. weight management, prevention of alcoholism and smoking, dietary management and physical activities.

Case presentation

A 48 year old female presented to hospital complaint of severe lethargy, breathlessness (dyspnea), loss of appetite and body itchininess. Upon examination, her blood pressure was 216/110 mm of Hg and body temperature was 39.7 °C (103 °F) and ankle edema was observed. Prior history of patient showed that she was neither diabetic nor hypertensive but she mentioned that she is a smoker (minimum 15 cigarettes per day) and has been taking anti-anxiety medicines (diazepam) prescribed by a general physician for more than one year. Patient was over-weight with current weight of 89 kg (BMI: 33) and was suffering from severe knee pain for past 2 years. She further told physician that she has been taking Ibuprofen for her knee pain. Ibuprofen was also prescribed by her general physician two years ago and she was advised to take it during severe pain only and was instructed to lose weight. Patient told that she was unable to lose weight as she would feel lethargy with her daily tasks and hence unable to perform any exercise. Upon inquired by doctor, patient told that she has been constantly taking ibuprofen for past two years and since few months she started feeling itchininess all over her body and felt breast tenderness. She ignored her condition due to poor financial status and thought itchininess is due to change of her body soap which might have also caused breast tenderness. Another reason of neglecting health was her thought of being old as the main culprit for health associated problems.

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Upon admission, patient underwent blood tests and ECG. Her ECG showed ventricular hypertrophy while blood test showed marked elevation of renal functioning tests i.e. serum creatinine was 1.7mg/dl (normal value: 0.6-1.1 mg/dl) with BUN of 32 mg/dl(normal value: 6-20 mg/dl), hemoglobin 6.9 g/dl (normal value: 12-16 g/dl). The estimated glomerular filtration rate of patient as calculated by MDRD (Modification of diet in renal disease) renal function predictive equation was 21 ml/min (stage 4 of ESRD).

On the basis of current lab reports and past medical history, patient was diagnosed with renal failure accompanied with uncontrollable hypertension.

Based on patient medical condition, she was prescribed with bisoprolol (Beta blocker) and amlodipine (Calcium channel blocker) for controlling her blood pressure and maintaining blood supply to heart. Severe knee pain suffered by patient was due to inadequate level of vitamin D. Patient was prescribed with Alphacalcidol (Vitamin D) for maintenance of serum calcium level that will ultimately prevent overactivation of parathyroid gland. Patient was further advised to control her diet, lose weight by following suitable exercise regimen and was encouraged to quit smoking or at least start by decreasing frequency of smoking. Dialysis sessions were planned for patient as there is no other cure for chronic kidney disease at such stage.

Moreover, dialysis will help to remove extra fluid and waste products from her body ultimately eliminating edema and itchiness. Other supportive measures such as oxygenation to relief dyspnea, restriction of fluid and potassium and provision of loop diuretics to relief edema were instantly provided to patient.

DISCUSSION

The authors described the case of an overweight female smoker who presented to hospital with several complains. The fact that patient was suffering from renal dysfunction was indicated by several complications such as uncontrollable high blood pressure, edema and more notably itchiness on body. High blood pressure forces the heart to pump blood with greater force and as a result damages several vessels of different organs particularly kidneys. Due to extremely high force of blood flow, kidney vessels become narrow.

Narrowing of kidney vessels causes prevention or delay in excretion of excessive fluid and waste products from the body. As a result of excessive build-up of waste products and fluids inside body, the consequence is itching and edema (2). Another important reason for generalized itching is high activation of parathyroid gland that is due to imbalance of calcium and phosphorous.

Due to reduce kidney function, the level of calcium decreases in blood causing parathyroid gland to release more parathyroid hormone so that calcium is released from bones and circulates in blood. This high level of parathyroid hormone in blood accompanied by high level of phosphorous is responsible for

generalized itching of body (3). Severe lethargy as complained by our patient too is another vital symptom of kidney dysfunction. As the function of kidney reduces, the production of erythropoietin hormone is also affected negatively i.e. decrease production and ultimately less production of red blood cells (RBC's). As RBC's are responsible for carrying oxygen to all cells of the body, their reduced production results in less supply of oxygen to all major organs of the body that ultimately causes lethargy or fatigue (4). Patient medical history showed that she was neither diabetic nor hypertensive. Secondly, there was no family history of vascular disease.

Regular use of non-steroidal anti-inflammatory drugs (NSAIDs'), heavy smoking and being over-weight were the main risk factors that lead to hypertension with associated kidney failure in current patient. Role of NSAIDs in causing kidney dysfunction in this patient was further confirmed by Naranjo adverse drug reaction probability scale with a score of 9. Patient reported to use Ibuprofen on regular basis for her knee pain. Long term use of NSAIDs has been reported to cause "analgesic nephropathy". Analgesic nephropathy is a pathological condition in which kidney function is affected due to long term use of analgesics (5). This is a type of chronic kidney disease that irreversibly damages kidney and puts life on the mercy of dialysis or in severe cases kidney transplant.

Being regular smoker also puts our patient on the verge of developing chronic kidney disease. Smoking not only increases blood pressure but also reduces blood supply towards kidney and causes narrowing of kidney vessels. All these factors accelerate kidney dysfunction and ultimately cause chronic kidney disease.

CONCLUSION

Chronic kidney disease is one of the most prevalent non-communicable diseases with alarming morbidity as well as mortality. One of the least highlighted causes of chronic renal failure is analgesic nephropathy that can be significantly prevented. Misuse or long term use of OTCs' without advice or prior consultation of healthcare professionals may lead to serious health problems.

In order to avoid such harmful consequences, patients' should be properly counsel about their health concerns and medications prescribed to them. This emphasize the role of pharmacist in healthcare system as he/she is responsible for proper counseling of patient regarding medicine use and adverse effects associated with medicines. Long term use of such drugs should be strictly discouraged and such users should be encouraged to undergo renal screening tests as early as possible in order to detect early kidney damage.

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