



KIDNEY INJURY INDUCED BY USE OF HERBAL PILLS

Nephrology

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ABSTRACT

Background: Herbal and ayurvedic drugs are used widely for several illnesses. These are often administered without adequate clinical rationale. **Case:** We present a case of a 33-year-old male who took ayurvedic pills and powders for more than 14 months, just to manage impaired serum creatinine levels. His renal functions went on deteriorating; still he continued the pills. He was apparently asymptomatic. He was alarmed by a sane friend who found him very weak and asked him to review his renal functions. His serum creatinine level came out to be 20.35 mg/dL. He was further investigated and diagnosed as chronic kidney disease. He was advised haemodialysis. **Conclusion:** There are magic pills available in plenty, for various ailments. A good number of them are nephrotoxic. Without monitoring kidney function tests, these should not be taken.

KEYWORDS

Nephrotoxicity, Herbal medicines.

INTRODUCTION

The use of herbal and ayurvedic medicines is not uncommon. It is prevalent in the populations with limited access to quality healthcare. In such a scenario there is seen a preference for traditional healing options. However, often the concerns about their safety, efficacy, scientific evidence are neglected. These magical pills often contain heavy metals, plant extracts, and unlisted pharmaceutical adulterants, which are nephrotoxic^[1,2,3,4,5]. This risk of nephrotoxicity is often underestimated by patients as well as by the practitioners and the guidelines about the uses of such pills are not followed^[6]. In this report, we present a case of severe kidney injury in a young male patient who took these pills for over a year, leading to progressive renal failure.

Case Description

History

A 33-year-old male with no history of diabetes, hypertension, or autoimmune disorders, presented with impaired appetite, dyspepsia and lassitude for 3 months duration. He informed that he passed adequate urine, and bowel habits were normal. He was not much concerned about his illness, and considered his symptoms to be of trivial nature.

His spouse had few reports, which she shared later. This showed gradual increase in values of serum creatinine over one year. His last report was of 26 January 2025, and it read as serum creatinine 20.35 mg/dl, eGFR 2.56 mL/min/1.73m² and serum urea 259.60 mg/dL.

On Clinical Examination

BMI 23.2 kg/m², BP 142/92 mm of Hg, pulse 104 beats/min, afebrile, bilateral mild pitting pedal oedema, no icterus; left renal area was mildly tender to abdominal palpation. There were no bruits on auscultation over the renal areas.

In September 2022, he had fever that lasted for 3-4 days. He was managed as a case of viral fever by a rural practitioner. He became afebrile and felt better. After around 3 weeks, again he developed fever, that lasted for few days. This time again he was managed with some pills, and he apparently became asymptomatic. This episode was repeated once more in November 2022. He took some pills and got better. (No documents of these illnesses were available with him. He was on advice by apparently a rural practitioner.)

Available Old Relevant Laboratory Reports

In March 2023, some blood tests were done on him. Hb 13.2 g/dl, WBC 5600/cmm, DLC (P 57 L 40, E02, M1), platelets adequate, and serum creatinine 2.23 mg/dL. He was advised to take some pills and powder to take care of the raised creatinine level, again by the same practitioner. He started taking the pills from April 2023 onwards; with the objective of managing marginally raised serum creatinine levels. He continued to take these kinds of pills till the date he reported to our OPD; in February 2025.

His Lab Reports Were:

Jan 26, 2025: urea 259.6, serum creatinine 20.35mg/dL, eGFR 2.56 mL/min/1.73m²

Jan 21, 2025: serum creatinine 17.89 mg/dL, eGFR 2.99 mL/min/1.73m², serum uric acid 8.35 mg/dL

Jan 07, 2025: serum creatinine 11.2 mg/dL, serum uric acid 5.3 mg/dL

Oct 29, 2024: serum creatinine 8.27 mg/dL, serum uric acid 5.54 mg/dL

Jan 02, 2024: serum creatinine 5.32 mg/dL, serum uric acid 6.90 mg/dL

Advice

He was advised to stop taking those pills, and was sent for investigations.

Reports Carried On 11 Feb 2025

Sonography Of Abdomen:

Both kidneys were small with increased echogenicity. No evidence of suprarenal enlargement or renal artery stenosis.

Mild hepatomegaly with coarse echotexture. Minimal non-tappable ascites.

Lab Reports:

Haemoglobin 6.2 g/dL, total leucocytes count 3510 cells/cmm (P 69, L20, Mo 6, E 5) red blood cells count 2.12 mill/cmm, haematocrit 19.7%, platelets count 115,000/ml,

Glycosylated haemoglobin 5.7%, random plasma glucose: 118/ mg/dL Liver function tests: AST: 15 IU/L, ALT: 16 IU/L, serum bilirubin (total): 0.7 mg/dL

Kidney Function Tests: serum urea 250.38 mg/dL, serum creatinine 19.9 mg/dL, eGFR 2.88 mL/min/1.73 sqm, serum uric acid 11.7 mg/dL, Na 143 mmol/dL, K 4.6 mmol/dL, Cl 105 mmol/L

Thyroid functions (fT3, fT4 TSH) were within normal limits

HBsAg was non-reactive

Urine Analysis: showed mild proteinuria but no significant haematuria or casts.

Further investigations were conducted to rule out glomerulonephritis, autoimmune diseases, and infectious causes leading to renal dysfunction. An autoimmune workup, including ANA, ANCA, and complement levels, was unremarkable. Heavy metal screening, however, revealed elevated levels of lead and mercury, suggesting possible contamination of these ingredients in the herbal preparations that he was taking.

Renal biopsy was deferred due to the advanced stage of renal dysfunction and high procedural risk. Given the clinical findings, a diagnosis of acute kidney injury, likely pigment-induced and aggravated by prolonged herbal medication use, was made. The patient was initiated on conservative management, including dietary restrictions, and nephrology follow-up. Haemodialysis was advised.

He underwent haemodialysis at a higher centre of nephrology.

On renal biopsy his histopathology reports showed vacuolated tubular cells, degeneration of tubular epithelial cells, increased collagen deposits in the spaces between tubules, increased number of neutrophils and macrophages in the interstitial tissues and thickening of the mesangial matrix.

DISCUSSION

Kidney is a target organ in heavy metal toxicity, as it reabsorbs and concentrates divalent ions and metals. Magnitude of nephrotoxicity depends on the nature of the toxin, the dose, duration of exposure, genetic factors and the comorbidities.

Exposure Of These Toxins, Is Classified As:

- **Acute:** 1-14 days
- **Intermediate:** 15-365 days
- **Chronic:** more than 365 days

This case underlines the potential nephrotoxic role of herbal medications on prolonged use, particularly in patients with impaired renal functions.

Different mechanisms have been known to cause pigment-induced acute kidney injury (AKI).

The Probable Toxins:

These are commonly cadmium (Cd), lead (Pb), mercury (Hg), and arsenic (As), which are used in unregulated herbal preparations. These are potentially nephrotoxic and may cause interstitial nephritis, and other types of nephropathy too.

Cadmium: Highly nephrotoxic, may cause severe proximal tubular necrosis, with prominent cytoplasmic vacuolation and proteinuria.

Lead : Can cause damage to the proximal convoluted tubules, as well as may damage the glomeruli.

Mercury: May damage glomerular basement membrane and the proximal convoluted tubules. May lead to nephrotic syndrome.

Herbal Pigment Nephropathy: Certain plant-derived pigments can get precipitated in renal tubules; and can lead to obstructive nephropathy.

Unrecognized Nephrotoxic Compounds: Some herbs, such as Aristolochia sp., contain nephrotoxic alkaloids which are known to induce interstitial fibrosis leading to progressive renal failure.

Delayed Medical Intervention

Many patients strongly rely on magic pills until significant organ damage becomes apparent. This often delays essential medical evaluation and intervention.

The gradual increase in serum creatinine levels and declining renal functions in this patient suggests a chronic and cumulative toxic effect rather than an acute injury. It is likely that the episodes of fever he initially had, had involved kidneys too. After Covid-19 the autoimmune diseases have become more frequent, and more diverse [7].

The echogenic texture of the kidneys on sonography highlights significant renal parenchymal involvement. This case serves as an example, that cautions the clinicians about the need for awareness about the risks associated with herbal and magic pills uses.

CONCLUSION

Herbal and magic pills are often perceived safe by general people. However, their unregulated prolonged use may lead to a variety of complications. Nephrotoxicity is common in such cases. This case report highlights the potential dangers of herbal pills uses, especially in individuals with impaired renal functions.

Clinicians should maintain a high index of suspicion for herbal pills-induced nephrotoxicity. Public health initiatives should focus more on regulating the prescription and sale of potentially toxic herbal products. Public awareness campaign must also be undertaken to highlight this issue. Early diagnosis and timely medical intervention remain crucial in preventing irreversible renal damage in such cases.

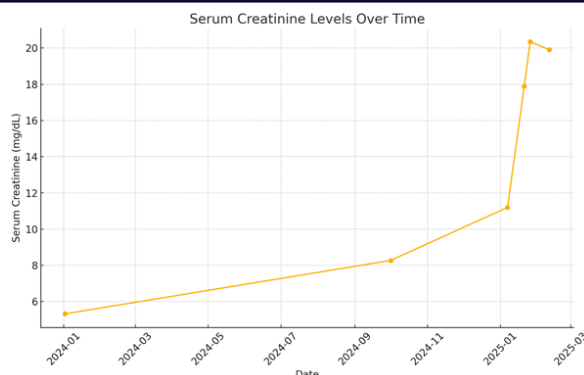


Chart: Serum creatinine levels against time

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