Akkad and Zhang, J Clin Case Rep 2017, 7:6
DOI: 10.4172/2165-7920.1000973

Journal of Clinical Case Reports

Case Report Open Access

Chaparral Induced Renal Failure

Apurva Akkad* and Youning Zhang

Department of Internal Medicine, University of Southern California, USA

Abstract

We report a patient presenting with adverse effects of an herbal supplement, Chaparral, which has been marketed to treat colds, skin disorders, arthritis, bladder infections, and even cancer, among other conditions. It is not approved by the FDA and there has been no research to support its marketed benefits. Some of the reported adverse effects include liver and kidney failure. Our patient presented with uremia. She was ruled out for other causes of renal failure such as glomerular disease, viral causes, and obstruction. Bilateral kidney ultrasound showed atrophic kidneys suggestive of acute on chronic kidney failure. This was successfully treated with hemodialysis during her hospitalization and was discharged with need for long term dialysis and follow up for potential renal transplant. This case illustrates the severe adverse effects that can occur as a result of Chaparral use in a patient using this medicine and reinforces the importance of a thorough medication history.

Keywords: Nephrotoxicity; Acute kidney injury; Herbal supplements

Introduction

Use of herbal medications, part of a larger class called complementary alternative medicines (CAM), remains common, in the range of 33% to 66% of clinic patients [1]. A study in 2007 showed that about 40% of adults had used CAM therapy in the past 12 months, with the most commonly used therapies being non-vitamin, non-mineral, natural products [2]. Many of these therapies, especially herbal medications, are not regulated by the FDA, and do not have evidence to support their marketed benefits. Annually there are about 25,000 CAM-related events reported to the American Association of Poison Control Centers, of which 7% of all medically-related toxicities are drug induced nephrotoxicity [3].

Case Report

A 25-year-old morbidly obese Hispanic female with no known past medical history presented with shortness of breath starting three days prior to admission. She reported progressively worsening nausea but no vomiting, generalized weakness and loss of appetite for the past month. She also had several episodes of epistaxis and easy bruising for the past month and denied prior episodes. She missed her menstrual period for the past 2 months and urine pregnancy test four days prior was negative. Patient denied headache, vision changes, sinus congestion, chest pain, palpitations, abdominal pain, diarrhea, constipation, fever, chills, unintentional weight loss, night sweats. She took ibuprofen 800 mg over the past few years whenever she felt body pain. She also admitted to taking herbal supplements for the past 6 months.

On initial presentation, patient had a temperature of 36.3, heart rate of 89, and respiratory rate of 33 and blood pressure of 142/66. On physical examination, she was morbidly obese, alert and oriented and mildly ill appearing. There was 2/6 systolic murmur best heard at left second intercostal space, otherwise normal S1/S2. Lung sounds were clear bilaterally. Abdomen was soft, non-distended and non-tender. There was trace bilateral lower extremity edema. Sensation and strength were intact in all extremities. Initial basic metabolic panel showed potassium of 5.6, bicarbonate of 5, anion gap of 50, calcium of 4.3, phosphorus of 8.2, BUN of 270 and creatinine of 25 with unknown baseline. Complete blood count was significant for anemia with hemoglobin of 7.1 and white count of 20.3. Patient was given 2 amps of sodium bicarbonate and 1 unit of packed red blood cells in the ED and was transferred to MICU for further evaluation and management. In the MICU, emergent CRRT was performed with subsequent correction of electrolytes. Further work up of renal failure revealed FeUrea of 48% and FeNa of 14% consistent with intrinsic renal disease, urine analysis positive for white blood cells and red blood cells but no casts, no protein. Urine toxicology screening was negative. HIV, RPR and hepatitis panel were negative. C-ANCA was positive however myeloperoxidase antibody and protein 3 antibodies were negative, ANA, p-ANCA, anti-streptolysin, rheumatoid factor, anti-GBM antibody, C3 and C4 were all negative, so rheumatologic cause was ruled out. Given normal level of creatine kinase, rhabomyolysis was ruled out. Abdominal ultrasound showed a 7.3 cm right kidney and a 6.2 cm left kidney which demonstrated increased cortical echogenicity with no hydronephrosis. Peripheral smear was normal. Iron panel consistent with anemia of chronic inflammation, attributed to her kidney failure. Haptoglobin and lactate dehydrogenase were both elevated and total bilirubin was normal, therefore hemolysis was ruled out. Total protein, albumin, liver function tests and thyroid stimulating hormone were all within normal limits. EKG and chest X-ray were normal. CT chest showed pneumomediastinum.

After this extensive inpatient workup, the patient's renal failure was finally attributed (diagnosis if exclusion) to her use of herbal supplements, which contained Chaparral, known by the FDA to be associated with kidney failure. The patient was dialyzed with daily hemodialysis through a permacath, and remained in the hospital for a total of 10 days. She was subsequently discharged with plans for long term hemodialysis. She was instructed to follow-up in renal clinic in order to monitor her kidney function and electrolytes, as well as to prepare her for possible kidney transplant.

Discussion

We report a case of renal failure related to CAM use, namely chaparral. Patient had no known history of medical conditions that would predispose her to renal failure, therefore differential diagnosis remained very broad. Based on the FeNa score and evidence of increased cortical echogenicity with lack of hydronephrosis on abdominal ultrasound, the cause of renal failure was determined to be intrinsic. Possible etiologies

***Corresponding author:** Apurva Akkad, Department of Internal Medicine, University of Southern California, USA, Tel: 5083802310; E-mail: Apu.akkad@gmail.com

Received May 21, 2017; **Accepted** June 12, 2017; **Published** June 16, 2017

Citation: Akkad A, Zhang Y (2017) Chaparral Induced Renal Failure. J Clin Case Rep 7: 973. doi: 10.4172/2165-7920.1000973

of intrinsic renal failure, including infectious, autoimmune, malignant and toxic were further explored and ruled out. Upon further questioning, patient finally reported use of herbal medications, with chaparral being one of the main ingredients. After a thorough work up with no source found, a diagnosis of renal failure secondary to chaparral use was made as a diagnosis of exclusion.

Different forms of CAM continue to be an integral component of outpatient as well as inpatient practice and continue to be beyond the reach of regulation to ensure safety and quality. Kidneys are particularly vulnerable to toxic insults due to active uptake by tubular cells leading to high concentration in the medullary interstitium [4,5]. There has been one case report in the literature which describes a 56-year-old woman with a 3-month history of chaparral use who presented with elevated creatinine and was found to have bilateral renal cystic disease and cystic renal cell carcinoma [6]. Nordihydroguaiaretic acid (NDGA) is a major constituent of chaparral which has been shown to be associated with cystic nephropathy in animals by Goodman et al. [7] and Evan et al. [8].

Conclusion

Data has suggested that only 38.5% of CAM use was reported to the physicians [9-11] and only 12% of CAM users have sought care from a licensed physician [12]. There were 629 million visits to alternative medicine practitioners in 1997, more than total number of visits to all U.S. primary care visits [11]. Most patients do not have an understanding of the potential detrimental effects of herbal supplements. Therefore, this case highlights the importance for physicians to obtain a comprehensive list of home medications including herbal and dietary supplements.

References

1. Herman CJ, Allen P, Hunt WC, Prasad A, Brady TJ (2004) Use of complementary therapies among primary care clinic patients with arthritis. Prev Chronic Dis 1: A12.
2. Barnes PM, Bloom B, Nahin RL (2008) Complementary and alternative medicine use among adults and children. Natl Health Stat Report. 12: 1-23.
3. Watson WA, Litovitz TL, Klein-Schwartz W (2004) 2003 Annual report of the American Association of Poison Control Centers Toxic Exposure Surveillance System. Am J Emerg Med 22: 335-404.
4. Patel DN, Low WL, Tan LL (2012) Adverse events associated with the use of complementary medicine and health supplements: an analysis of reports in the Singapore Pharmacovigilance database from 1998 to 2009. Clin Toxicol 50: 481-489.
5. Jha V, Chugh KS (2003) Nephropathy associated with animal, plant, and chemical toxins in the tropics. Semin Nephrol 23: 49-65.
6. Smith AY, Feddersen RM, Gardner KD, Davis CJ (1994) Cystic renal cell carcinoma and acquired renal cystic disease associated with consumption of chaparral tea: A case report. J Urol 152: 2089-2091.
7. Goodman T, Grice HC, Becking GC, Salem FA (1970) A cystic nephropathy induced by nordihydroguaiaretic acid in the rat. Light and electron microscopic investigations. Lab Invest 23: 93-107.
8. Evan AP, Gardner KD (1979) Nephron obstruction in nordihydroguaiaretic acid-induced renal cystic disease. Kidney Int 15: 7-19.
9. Kim HY, Kim SS, Bae SH, Bae EH, Ma SK, et al. (2014) Acute interstitial nephritis induced by Dioscorea quinqueloba. BMC Nephrol 15: 143.
10. Ryan M, Lazar I, Nadasdy GM, Nadasdy T, Satoskar AA (2015) Acute kidney injury and hyperbilirubinemia in a young male after ingestion of *Tribulus terrestris*. Clin Nephrol 83: 177-183.
11. Eisenberg DM, Davis RB, Ettner SL (1998) Trends in alternative medicine use in the United States, 1990-1997: results of a follow-up national survey. JAMA 280: 1569-1575.
12. Gabardi S, Munz K, Ulbricht C (2007) A review of dietary supplement-induced renal dysfunction. Clin J Am Soc Nephrol 2: 757-765.