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# Acid-Base Balance-Electrolyte Quiz – Case 34

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A 62-year-old woman (body weight 68 kg) with urinary tract infection treated with cotrimoxazole developed fatigue and muscle weakness. The patient was treated with irbesartan + HCTZ (300 + 12.5 mg/day) for hypertension.

Laboratory investigation showed: serum creatinine 1.3 mg/dL, potassium 6.2 mEq/L, sodium 135 mEq/L, and magnesium 1.5 mEq/L.

Which is the most possible cause of hyperkalemia?

a. The administration of irbesartan

b. The addition of cotrimoxazole

c. The mild decrease of renal function (eGFR 44 mL/min)

d. The potential increased potassium intake

**Comment**

*The patient developed symptomatic hyperkalemia which is due to the administration of trimethoprim. It is well known that trimethoprim has structural and pharmacological similarity to amiloride and can significantly reduce potassium excretion. The inhibition of potassium excretion may predispose susceptible individuals to hyperkalemia, as it was the case in our patient. Thus, the risk of hyperkalemia is higher in diabetic patients with hyporeninemic hypoaldosteronism, in patients with AIDS, in elderly individuals, in patients with renal insufficiency, as well as in patients receiving other drugs affecting potassium homeostasis, such as angiotensin converting enzyme inhibitors, sartans, NSAIDs or spironolactone. In our case, the decrease of renal function and the co-administration of irbesartan were predisposing factors for the development of hyperkalemia. It is suggested that serum potassium levels should be checked following a few days of trimethoprim administration in high risk patients for the development of hyperkalemia. It should be mentioned that less frequently amiloride can lead to renal tubular sodium wasting resulting in hypovolemia-induced hyponatremia.*

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**Answer:** *The addition of cotrimoxazole*