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Case Study

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A CASE REPORT ON TELMISARTAN INDUCED HYPONATREMIA

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ABSTRACT

Hyponatremia is defined as a serum sodium concentration of less than 135 mEq/L. It is most often seen as a complication of some medical illnesses like heart failure, liver failure, kidney failure, pneumonia. The normal serum sodium concentration is 135- 145mEq/L. There are some drugs that leads to hyponatremia are ACE inhibitors, antibiotics like Trimethoprim- sulfamethoxazole, ciprofloxacin, cefoperazone sulbactam, antiarrhythmic, proton pump inhibitors. Telmisartan is an angiotensin receptorblocker used to treat hypertension which acts by inhibiting vasoconstrictor and aldosterone -secreting effect of angiotensin II. The common adverse effects are hyponatremia, hyperkalemia, upper respiratory tract infection, back pain, cough, impotence, increased sweating, palpitations, tachycardia, rash dermatitis. It is contraindicated to some other drugs like ramipril, aliskiren, elagolix.

KEYWORDS: Hyponatremia, telmisartan, ARBs, hyperkalemia.

INTRODUCTION

Telmisartan is in a class of medications called angiotensin II receptor antagonists. It works by blocking the action of certain natural substances that tighten the blood vessels, allowing the blood to flow more smoothly and the heart to pump more efficiently. Telmisartan is also used sometimes to treat heart failure (condition in which the heart is unable to pump enough blood to the rest of the body) and diabetic nephropathy (kidney disease in people with diabetes and high blood pressure). The common adverse effects arehyponatremia, hyperkalemia, upper respiratory tract infection,back pain, cough, impotence,increased sweating.

Hyponatremia is defined as a serum sodium concentration of less than 135 mEq/L.When the amount of sodium in fluids outside cells drops below normal, water moves into the cells to balance the levels. This causes the cells to swell with too much water. Brain cells are especially sensitive to swelling, and this causes many of the symptoms of low sodium.With low blood sodium (hyponatremia), the imbalance of water to sodium is caused by one of three conditions:

- Euvolemic hyponatremia -- total body water increases, but the body's sodium content stays the same.
- Hypervolemic hyponatremia -- both sodium and water content in the bodyincrease, but the water gain is greater.
- Hypovolemic hyponatremia -- water and sodium are both lost from the body, but the sodium loss is greater.

CASE REPORT

A 69 year old female patient was admitted to the hospital with complaints of generalizedtiredness since 1 day,head numbness,occasional abdominal pain present ,increased frequency of micturition,2-3 episodes of nausea and vomiting and no complaints of cough,breathing difficulty,chest pain or chest heaviness .she was having comorbidities like typeII diabetes mellitus(for 15 years), systemic hypertension and old CVA(8 years back), dyslipidemia(5-6 years), hypothyroidism.she had undergone Bilateral knee replacement (on 2018),right cataract surgery (3 month back), hysterectomy(25 years back). she is taking T.Tazloc (Telmisartan) 40 mg OD,T. Cilacar (cilnidipine) 10 mg BD,T.Atorva (Atorvastatin) 10 mg HS,T.Thyronorm(Thyroxine sodium) 50 mcg, T.glucobay (acarbose) 25 mg BD.On examination patient was found to be disoriented and the vitals shows BP-170/100mmHg, HR-58 beats/min, SPo2-99%, serum sodium - 128mg/dL,serum potassium-3.09mg/dL,Hb-10%,Troponin I-negative, GRBS- 116mg/dL.T.tazloc were stopped and she was treated with following medications like T.Tazloc (Telmisartan) 40 mg OD,T. Cilacar (cilnidipine) 10 mg BD,T.Atorva (Atorvastatin) 10 mg HS,T.Thyronorm (Thyroxine sodium) 50 mcg, T.glucobay (acarbose) 25 mg BD,T. Tolvaptan 15 mg OD,T.alupent (orciprenaline)10 mg ½-0-½,C.Razo (Rabeprazole) 20 mg.At the time of discharge she was found to be symptomatically better.

DISCUSSION

Low blood sodium is a condition in which the sodium level in the blood is lower than normal. The medical name of this condition is hyponatremia. Hyponatremia is defined asa serum sodium concentration of less than 135 mEq/L.It is most often seen as a complication of some medical illnesses like heart failure, liver failure, kidney failure, pneumonia. The normal serum sodium concentration is 135-145mEq/L. With low blood sodium (hyponatremia), the imbalance of water to sodium is caused by one of three conditions:

- Euvolemic hyponatremia -- total body water increases, but the body's sodium content stays the same
- Hypervolemic hyponatremia -- both sodium and water content in the bodyincrease, but the water gain is greater
- Hypovolemic hyponatremia -- water and sodium are both lost from the body, but the sodium loss is greater

Hyponatremia can be further subclassified according to effective osmolality

- Hypotonic hyponatremia
- Isotonic hyponatremia
- Hypertonic hyponatremia

The symptoms of hyponatremia include nausea, malaise, lethargy, decreased level of consciousness headache seizures and coma. The severity of neurologic symptoms correlates well with the rate anddegree of drop in serum sodium. The differential diagnosis which were considered are hyperlipidemia, paraproteinemia, pseudohyponatremia, adrenal crisis alcoholism, cardiogenic pulmonary edema, cirrhosis hypothyroidism. There are three essential laboratory tests in the evaluation of patients with hyponatremia together with the history and the physical examination

These tests are as follows

- Urine osmolarity
- Serum osmolarity
- Urinary sodium concentration

The treatment options for symptomatic patients with acute hyponatremia are severe symptoms 100mL of 3% Nacl infused intravenously over 10 minutes x 3 as needed

Mild to moderate symptoms in patients at low risk for herniation -3% saline infused at 0.5-2mL/Kg/h

The European Society of intensive care medicine the european society of endocrinology andeuropean renal association propose the treatment recommendations

- For serious symptomatic hyponatremia the first line of treatment is prompt intravenous infusion of hypertonic saline with target increase of 6 mmol/L over24 hours and an additional 8 mmol /L during every 24 hours thereafter until the patient's serum sodium concentration reaches 130mmol/L.
- Firstline treatment for patients with SIADH and moderate or profound hyponatremia should be fluid restriction second line treatments include increasing solute intake with 0.25-0.5 g/kg day or combined treatment with lowdose loop diuretics
- For patients with reduced circulating volume extracellular volume should be restored with an intravenous infusion of 0.9 % saline or a balanced crystalloidsolution at 0.5 to 1 mL/kg per hour.

For the asymptomatic patient ,in case of hypovolemic hyponatremia administer isotonic saline to patients who are hypovolemic to replace the contracted intravascular volume.patients with hypovolemia secondary to diuretics may also need potassium repletion..In case of hypervolemic hyponatremia treat patients who are hypervolemic with salt and fluid restriction plus loop diuretics and correction of the underlying condition.For normovolemic asymptomatic hyponatremic patients water restriction is generally the treatment of choice.

CONCLUSION

Hyponatremia is one of the long term use by adverse event of angiotensin receptor blockers.Hence ,physicians should evaluate the patient's condition inorder to prevent the progressionof the adverse event.Although the patient gets recovered after stopping the offending agent and need follow up whether any recurrence.

CONFLICTS OF INTEREST

The authors have obtained the necessary patient consent forms where the patients have given their approval for participation in the investigation, followed by representation in the concerned article. The patients do understand that the authors will ensure that their identitieswon't be revealed.

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