IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

A CASE REPORT ON SEPTIC ACUTE KIDNEY INJURY WITH RECENTLY DIAGNOSED HYPOTHYROIDISM, HYPERTENSION, TINEA CORPORIS AND TINEA CRURIS

[*1]Twinkle Rathod, [1]Vraj Patel, [2]Mohit Buddhadev, [2]S P Srinivas Nayak, [3]Gunosindhu Chakraborthy

[1]PharmD, Parul Institute of Pharmacy and Research, Parul University, Vadodara, Gujarat.

[2]Assistant Professor, Dept. of Pharmacy Practice, Parul Institute of Pharmacy and Research, Parul University, Vadodara, Gujarat.

[3]Professor & Pincipal, Parul Institute of Pharmacy and Research, Parul University, Vadodara, Gujarat.

ABSTRACT

A female geriatric patient, recently diagnosed with Hypothyroidism, Hypertension and Fungal infections, was on dialysis and treated for Septic acute kidney injury. Patient attained menopause twenty years back. Upon communication, she told she never went to the hospital for her routine body checkup as she didn't had any symptoms as such. The inter-relationship between Hypertension - Hypothyroidism and Hypothyroidism-Menopause suspects the actual pathophysiology for developing complication such as Septic acute kidney injury. Age and low immunity being a causative factor for developing fungal injections. Our case report concluded the actual relationship between the above mentioned diseases.Thus, therapeutic drug monitoring in various patients population such as geriatrics, pediatrics, obese or with complications, is must in order to achieve desired therapeutic outcomes and maintaining the safety levels of the drugs in the body. Hence, decreasing re-hospitalization and improving the quality of life of patients by curing the symptoms or disease in its best possible way.

Keywords: Acute kidney injury, Hypothyroidism, Hypertension, Tinea cruris, Tinea carporis

INTRODUCTION

Uncontrolled high blood pressure can narrow, weaken, or stiffen the arteries surrounding the kidneys over time. These arteries are unable to carry enough blood to the renal tissue due to their impairment. Subsequently it leads to kidney injury. [1] Hypothyroidism has various etiologies and indications. Proper therapy requires an exact finding and is impacted by coinciding ailments. Thyroid problems are more common in women than in men, with a 5-20 times higher prevalence in women than in males. Furthermore, most thyroid problems become more common as people get older. As a result, postmenopausal and older women are more likely to develop thyroid gland autoimmunity, hypothyroidism, nodular goitre, and malignancy. Thyroid disease is difficult to diagnose in this group of patients since anxiety, heart palpitations, sweating, weight gain, and

insomnia are all indications of thyroid and ovarian dysfunction. Additional issues arise from the interpretation of thyroid function test results: many studies show that serum TSH, thyroxine (T4), and triiodothyronine (T3) concentrations are affected by age, comorbidities, and medical treatment, which can make thyroid dysfunction diagnosis more difficult in the elderly female patients. [2] Acute kidney injury (AKI) is a common complication in critically ill patients, and it's linked to higher morbidity and fatality rates. The most common cause of AKI is sepsis. There is now substantial evidence that the pathogenic processes of sepsis-induced AKI are distinct from those seen in other AKI etiologies. [3] The prevalence of superficial mycotic infection worldwide is 20–25% of which dermatophytes are the most common agents. Recent developments in understanding the pathophysiology of dermatophytosis have confirmed the central role of cell-mediated immunity in countering these infections. [4] Tinea corporis is a dermatophyte-caused superficial fungal skin infection of the body. Tinea corporis is found all over the world. The position of the lesions, which might affect the trunk, neck, arms, and legs, is explicitly described. Dermatophyte infections that affect other parts of the body have different names. The scalp (tinea capitis), face (tinea faciei), hands (tinea manuum), groin (tinea cruris), and feet (tinea pedis) are among them (tinea pedis). [5]

CASE REPORT

A 70 years old female patient was admitted with the complaints of weakness since 15 days, decreased urine output since 1 day, breathlessness on exertion since 15 days, drowsiness since 3 days, decreased appetite, bowel-bladder movement and increased sleep since 15 days, pedal edema up to knees since 15 days, abdominal distension since 10 days, facial edema since 10 days, fatigue since 10 days and burning micturition since 1 day.

PHYSICAL EXAMINATION:

On General examination the patient was fair, cooperative and coherent; CNS: Drowsy and disoriented; CVS: S1, S2 (positive), no murmurs; RS: BLAE (+), crepts (present); GIT: soft, non-distended.

VITALS:

Blood Pressure (BP): 128/80 mm of Hg, Respiratory Rate (RR): 16 breaths/minute, Pulse rate (PR): 118 beats/minute, Temperature: 98^0F, Oxygen saturation (SpO2): 98% on Room Air.

PATIENT'S HISTORY OF PRESENT ILLNESS

- Medical history – Patient was previously admitted in private hospital where she was diagnosed with Hypothyroidism, Hypertension, Tinea corporis and Tinea crusis 15 days back. Total abdominal hysterectomy was done 10 years back.
- Medication history – Tab. Thyroxine 75mg before breakfast, T. Prulifloxacin 20mg OD, Tab. Itraconazole 200mg TID, Tab. Nifedipine 20mg OD, Tab. Pregabalin 75mg HS, Tab. Sodium bicarbonate 500mg TID.
- Menstrual history – Menopause 20 years back.
- Diet history – Vegetarian diet.
- Family history – Husband has Diabetes mellitus.

LABORATORY FINDINGS

Parameters	**17/08/2021**	**19/08/2021**	**24/08/2021**	**30/08/2021**	**Normal range**	**Interference**
Hemoglobin	10.70g/dl	9.20g/dl	10.20g/dl	9.10g/dl	12-17.5 g/dl	Anemia
RBCs	3.35 mill/cumm	3.36 mill/cumm	3.61mill /cumm	3.40 mill/cumm	4.2-6.1 mill/cumm	Anemia
WBCs	17900 cells/cumm	11800 cells/cumm	10500cells/cumm	9200 cells/cumm	4500-11000cells/cumm	Normal
Neutrophils	87%	77%	70%	78%	40-80%	Normal
Lymphocytes	11%	19%	28%	20%	20-40%	Normal
Monocytes	1%	1%	1%	1%	2-10%	Monocytopenia
Eosinophils	1%	3%	1%	1%	1-6%	Normal
Basophils	0%	0%	0%	0%	<1-2%	Normal
MCH		27.30pg	28.20pg	26.80pg	24-30pg	Normal
MCHC		33.90g/dl	34g/dl	32.90g/dl	31-37g/dl	Normal
MCV		81fL	83.20fL	82fL	80-96fL	Normal
PCV		27%	30%	27.80%	40-56%	Anemia
RDWs		12.20%	12.40%	11.70%	11.6-14%	Normal
SGOT (AST)	32U/L		32IU/L		5-40IU/L	Normal
SGPT (ALT)	26U/L		15IU/L		7-56IU/L	Normal
Serum ALP	156U/L		122IU/L		44-147IU/L	Normal
Total Bilirubin	0.80 mg/dl		0.70mg/dl		0.1-1.2mg/dl	Normal
Direct Bilirubin	0.30 mg/dl		0.30mg/dl		0.1-0.4mg/dl	Normal
Indirect Bilirubin	0.50 mg/dl		0.40mg/dl		0.1-0.8mg/dl	Normal

Total Protein	5.40 g/dl		4.30g/dl		6-8g/dl	Impaired Liver or Kidney function
Albumin	2.30 g/dl		1.70g/dl		3.5-5.5g/dl	Impaired Liver or Kidney function
Globulin	3.10g/dL		2.60g/dL		2.3-3.6g/dL	Normal
Albumin/Globulin ratio			0.65		1-2	Normal
Sodium	131 mEq/L	132 mEq/L	130mEq/L		135-145mEq/L	Impaired Kidney function
Potassium	4.60 mEq/L	3.90 mEq/L	4.20mEq/L		3.5-5mEq/L	Normal
Urea	146 mg/dl	112 mg/dl	109mg/dl		7-20mg/dl	Impaired Kidney function
Creatinine	4.98mg/dl	3.93mg/dl	2.75mg/dl		0.5-1.2mg/dl	Impaired Kidney function
Random Blood Glucose			149mg/dl		79-160mg/dl	Normal

Table.1 Laboratory Table

DIAGNOSTIC TESTS

- Sonography of abdomen – Mild fatty changes in liver, minimally distended gall bladder with thickened and edematous 7mm wall, Raised cortical echogenecity in kidney, Moderate ascites in abdomen.
- Anti-nuclear antibody – Negative
- Urine pathology – Presence of albumin ++ approximately 100mg/dL
- Urine Protein Creatinine Ratio – Urine micro protein 1728.3mg/dL, Urine Creatinine 85.51mg/dL, Urine Protein Creatinine Ratio 20.21mg/mg (low grade proteinuria >5 nephrosis), Urine Protein present 4+.
- ENT examination – Multiple ulcers over tongue.
- Dermatological examination – Hyperpigmented plaques over B/L upper limbs, groins, buttocks and abdomen with necrosis and skin exfoliation.

FINAL DIAGNOSIS: SEPTIC ACUTE KIDNEY INJURY IN CASE OF FRESHLY DIAGNOSED HYPERTENSION, HYPOTHYROIDISM AND FUNGAL INFECTION – TINEA CORPORIS AND TINEA CRURIS.

PLAN OF ACTION

Sr.	Drug	Dose	Route	Frequency	1	2	3	4	5	6	7	8	9
1.	Inj. Ceftriaxone	1gm	IV	BD	Y	N	N	N	N	N	N	N	N
2.	Inj. Human Albumin	20% total protein	IV	BD	Y	Y	Y	Y	N	N	Y	Y	Y
3.	Inj. Piperacillin Tazobactum	2.25gm in 100ml NS	IV	TID	Y	Y	Y	Y	Y	Y	Y	Y	Y
4.	Tab. Itraconazole	200mg	PO	TID	Y	Y	Y	Y	Y	Y	Y	N	N
5.	Tab. Thyroxine	75mg	PO	1 tab before breakfast	Y	Y	Y	Y	Y	Y	Y	Y	Y
6.	Tab. Nifedipine	20mg	PO	OD	Y	Y	Y	Y	N	N	N	N	N
7.	Tab. Pregabalin	75mg	PO	HS	Y	Y	Y	Y	Y	Y	Y	Y	Y
8.	Inj. Pantoprazole	15mg	IV	BD	Y	Y	Y	Y	Y	Y	Y	Y	Y
9.	Inj. Ondansetron	4ml	IV	TID	Y	Y	Y	Y	Y	Y	Y	Y	Y
10.	Tab. Fluconazole	150mg	PO	OD (Alternate days)	N	N	N	N	N	N	N	N	Y
11.	Tab. Atorvastatin	5mg	PO	HS	N	N	N	N	N	N	N	Y	Y
12.	Tab. Chlorpheniramine	5mg	PO	BD	N	N	N	N	Y	Y	N	N	N
13.	Tab. Prulifloxacin	20mg	PO	OD with milk	Y	Y	Y	N	N	N	N	N	N
14.	Tab. Multivitamin B complex	Vit B1 5mg, Vit B2 5mg, Vit B3 50mg, Vit B5 5mg, Vit B6 2mg	PO	BD	Y	Y	Y	Y	Y	Y	Y	Y	Y

15.	Tab. Folic acid	5mg	PO	OD	Y	Y	Y	Y	Y	Y	Y	Y	Y
16.	Vitamin D3 sachet	60K IU	PO	Once a week	N	N	N	N	N	Y	Y	Y	Y
17.	Tab. Calcium	500mg	PO	BD	N	N	N	N	Y	Y	Y	Y	Y
18.	Tab. Sevelamer	600mg	PO	BD	N	N	N	N	Y	Y	Y	Y	Y
19.	Tab. Sodium bicarbonate	500mg	PO	BD	Y	Y	Y	Y	Y	Y	Y	Y	Y
20.	Syp. Citralka	2tsp	PO	BD	N	Y	Y	Y	N	N	N	N	N
21.	Syp. Laxose	30cc	PO	TDS	Y	Y	Y	Y	Y	Y	Y	Y	Y
22.	Neb. Ipratropium/Budecort	0.5mg/2 ml	Nasal	BD	N	N	N	N	N	Y	Y	Y	Y

Table.2 Supportive Management Chart, Y: Drug given, N: drug not given

DISCUSSION: Patient was recently diagnosed with Hypertension and Hypothyroidism 15 days back in a private hospital. Patient is 70 years old female, with history of menopause 20 years back. The prevalence of women's suffering with hypothyroidism is 7-10 times more than that in men and the rate increases simultaneously with the increase in age. [6] Also, there's a similarity between the symptoms of menopause and hypothyroidism which makes it difficult to diagnose the real cause. [7] Postmenopausal women's are at high risk of both, osteoporosis and cardiovascular diseases, where untreated thyroid disease may exacerbate these risks. [7] The above hypothesis suggests presence of UNDIAGNOSED HYPERTENSION and HYPOTHYROIDISM as a result of fluctuations in estrogen levels due to menopause. Patient had severe mouth ulcers which can be due to decreased levels of vitamin B12 (as the levels of vitamin B12 decreases in acute kidney injury) and so her appetite was decreased, hence she was feeling weak and dizzy. Hypertension, being a precipitating factor along with complaints of the patient and WBC count 17,900mg/dl strongly forms the basis for presence of SEPTIC ACUTE KIDNEY INJURY. Low levels of sodium and high levels of urea are due to ACUTE KIDNEY INJURY and hence, patient was feeling drowsy and disoriented. Patient is geriatric with low immunity which increases her susceptibility towards infections, hence she suffered from fungal infections.

CONCLUSION:

As the age increases the risk for developing many diseases and immunity to fight against it, increases and diminishes respectively. Hence, elderly population are highly susceptible to varying conditions some of which are difficult to diagnose unless and until any symptoms develops. Regular monitoring of health is necessary for healthy people as well as for those suffering from any medical condition – to keep tabs on their current condition and beware of any future health risk.

COMPLIANCE WITH ETHICAL STANDARDS

ACKNOWLEDGEMENTS: We would like to thank Principal Dr. Gunosindhu Chakraborthy, Principal and Professor PIPR, Parul University, all the authors and PIPR staff.

DISCLOSURE OF CONFLICT OF INTEREST: All authors declare that they don't have conflict of interest.

STATEMENT OF INFORMED CONSENT: Informed consent was obtained from th individual participant included in the study.

REFERENCES

1) https://www.heart.org/en/health-topics/high-blood-pressure/health-threats-from-high-blood-pressure/how-high-blood-pressure-can-lead-to-kidney-damage-or-failure

2) Garber JR, Cobin RH, Gharib H, et al. Clinical practice guidelines for hypothyroidism in adults: consponsored by Americam Association of Clinical Endocrinologists and the American Thyroid Association. Thyroid. 2012;22:1200–1235. [PubMed] [Google Scholar]

3) Zarbock A, Gomez H, Kellum JA. Sepsis-induced acute kidney injury revisited: pathophysiology, prevention and future therapies. Curr Opin Crit Care. 2014;20(6):588-595. doi:10.1097/MCC.0000000000000153

4) Gietka-Czernel M. The thyroid gland in postmenopausal women: physiology and diseases. Prz Menopauzalny [Internet]. 2017 [cited 2022 Jan 7];16(2):33–7.

5) Yee G, Al Aboud AM. Tinea Corporis. [Updated 2021 Aug 14]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2021 Jan.

6) del Ghianda S, Tonacchera M, Vitti P. Thyroid and menopause. Climacteric [Internet]. 2014 [cited 2022 Jan 7];17(3):225–34.

7) Sahoo AK, Mahajan R. Management of tinea corporis, tinea cruris, and tinea pedis: A comprehensive review. Indian Dermatol Online J [Internet]. 2016 [cited 2022 Jan 7];7(2):77–86.