



FALLS...AND THE BITTER DISAPPOINTMENTS THEREAFTER!

Internal Medicine

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ABSTRACT

Recurrent falls are always alarming. Especially so in elderly and more so when confronted with the knowledge that there is no tangible solution despite exhaustive evaluations and medications.

KEYWORDS

Recurrent falls, Hypotension, Degenerative disorder, Osteopenia.

INTRODUCTION :

80 year old male with complaints of dizziness on standing up since 2 years with worsening since the past 2 months was admitted. He also complained of nocturia, urinary incontinence and increased frequency of urination. Notable past history included squamous cell carcinoma for which he had a right mandibulectomy and received radiation, hypothyroidism. He also had 2 episodes of trivial falls in the past leading to fracture of hip and ankle, secondary to osteopenia.

O/E:

Patient was emaciated with generalized wasting, with BP – 114/70 mm Hg in supine position and 80/50 mm Hg on standing. Patient complained of dizziness on standing. Pulse rate of 60 beats per minute supine, no significant increase on standing.

Neurological examination – Cognition intact, motor and Sensory system were normal. Pupils 2mm bilaterally equal and reactive to light, Ocular movements were normal, Left sided dysdiadochokinesia with impaired Finger – nose test. No rigidity, No involuntary movements.

Autonomic test- Postural hypotension present. Loss of heart rate variability on deep breathing test.

Clinical Impression And Logical Explanation:

Postural hypotension with results of deep breathing test pointed towards significant autonomic dysfunction. Usual causes of postural hypotension such as diabetic neuropathy, cortisol deficiency, dehydration, hypovolemia etc. were ruled out. With the history of malignancy in the past along with mild pancytopenia, Paraneoplastic autonomic neuropathy was considered, which warranted a FDG PET scan and were ruled out.

The history of trivial falls followed by fractures warranted a work up for osteoporosis and other causes of pathological fractures.

Table of Investigations Sent :

Hemoglobin	12.4 g/dl
PCV	36.8 %
WBC	3700 /mm ³
Differential count	41/37/3/19/0 %
Platelets	131000/mm ³
ESR	
Sodium	133 mEq/L
Potassium	5 mEq/L
Creatinine	0.89 mg/dl
Calcium	9 mg/dl
Phosphorous	3.5 mg/dl
PTH	68.7 pg/ml
Vitamin D	38.9 ng/ml
ALP	45 U/L
Serum albumin	4.28 g/dl
Serum globulin	2.65 g/dl
Uric acid	4.27 mg/dl
Vitamin B 12	558 pg/ml

Serum a.m. cortisol	21.1 mcg/dl
PSA	4.55 ng/ml
HbA1c	5.3 %
Ft3	2.4 pg/ml
FT4	10 pmol/l
TSH	3.3 mIU/l
Magnesium	1.6 mg/dl
HS Trop I	2.8 pg/ml

- FDG PET SCAN: No evidence of malignancy
- ECG: Normal Sinus Rhythm
- 2D ECHO: Mild concentric LVH, Normal LVEF (60%), No RWMA, Grade 1 DD, Mild MR, Trivial TR, and No PAH
- Bone Densitometry: T score -2.4

MRI Brain:

Suggestive of Chronic ischemic changes

EMG NCS: L5 – S1 chronic motor axonal degeneration

Final Diagnosis : Multisystem atrophy – Cerebellar predominant

Course :

Patient was started on intravenous fluids and ORS. There was mild improvement in symptoms. Postural training and gait correction maneuvers were explained. Abdominal binders and elastic compression stockings were introduced. T. Midodrine 2.5 mg BD was given. Additionally, Inj. Erythropoietin 10000 units subcutaneously was given. T. Mirabegron 25 mg OD was given for urge incontinence. He was given calcium, vitamin D supplementation and planned for denosumab therapy for osteopenia.

The patient's quality of life improved with above measures and he was discharged.

Follow up: He continues to be apprehensive about falls and has indeed suffered from falls 2-3 times post discharge despite all above measures. He has, sadly, lost his confidence and prefers to lie down most of the time.

DISCUSSION:

Postural hypotension is diagnosed with a drop in systolic BP of more than 20 mm Hg or Diastolic BP of more than 10 mm Hg in 3 minutes of standing from supine position.⁽¹⁾ It is a telltale sign of autonomic dysfunction.

A bedside test of cardiac autonomic dysfunction includes a lack of increase in heart rate on standing and loss of heart rate variability on breathing⁽²⁾. In elderly, an increase in the ratio of heart rate during expiration to inspiration to over 1.06 suggests loss of heart rate variability during respiration.⁽³⁾ Additionally, a difference in heart rate during expiration to inspiration less than 5 beats per minute is considered abnormal in elderly as compared to more than 15 in normal individuals.⁽⁴⁾⁽⁵⁾

This patient had objective clinical evidence of autonomic dysfunction.

In view of accompanying cerebellar signs, history of urinary symptoms and autonomic dysfunction, a clinical diagnosis of **Multi-System Atrophy – Cerebellar subtype** was made.

Multisystem atrophy is a progressive neurodegenerative disease with two subtypes – Parkinsonian MSA – P and a rarer, Cerebellar MSA-C subtype.^(6,7) As there are no approved disease modifying agents for MSA till date, the treatment is mainly supportive and involves alleviating symptoms. In this case – postural hypotension and urinary incontinence.

Management modalities for postural hypotension include pharmacological and non-pharmacological measures.

Patients should be advised to sit up from supine position slowly and then stand up gradually to avoid pooling of blood in extremities. Raising the head end of the bed is also beneficial. Use of abdominal elastic binders with pressure is effective in reducing the drop in BP on standing up, by compressing the splanchnic vessels.⁽⁸⁾ Elastic stockings compress the veins of lower limbs and prevent venous pooling. Physical manoeuvres - leg crossing in standing and sitting position, squatting- use muscle pump action to improve circulation to the brain.⁽⁹⁾ Increasing dietary sodium to 6 – 10 g of sodium per day and 3 litres of water works by increasing intravascular volume.⁽¹⁰⁾ Common drugs that are used include Midodrine⁽¹¹⁾ which is an oral alpha – 1 agonist and Fludrocortisone, which exerts mineralocorticoid activity.⁽¹²⁾ Erythropoietin has also been shown to be effective in treatment of orthostatic hypotension.⁽¹³⁾ A frequent side effect side effect of these therapies is supine hypertension warranting regular BP monitoring.⁽¹⁴⁾ Urinary urge incontinence can be treated with Mirabegron, or anticholinergics.

Riluzole, Minocycline, Rifampin and Rasagiline, showed promising preclinical results initially but have shown no benefit.⁽¹⁴⁾

CONCLUSION :

MSA-C is a clinical diagnosis primarily and should be considered in patients with autonomic dysfunction and cerebellar symptoms. Hence a high index of suspicion is required for early diagnosis and symptomatic management of the disease.

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