Case Report

Primary Empty Sella Syndrome in a Woman with Metabolic Syndrome Presenting with Syncopal Attack: A Case Report

E. Musa[1, 2] **, B. Alonge**[3] **, D. Shok**[4] **, W. Stephen**[4]

[1]Division of Endocrinology and Diabetic Medicine, Department of Medicine, University of Cape Town, Cape Town, South Africa.

[2]Department of Internal Medicine, Kaduna State University/BarauDikko Teaching Hospital, Kaduna, Nigeria.

[3]Medical Center, NNPC, Kaduna, Nigeria.

[4]Department of Internal Medicine, BarauDikko Teaching Hospital, Kaduna, Nigeria.

ABSTRACT

Background: Empty sella syndrome (ESS) is a disorder that is characterised by leakage of cerebrospinal fluid (CSF) in the sella turcica through a diaphragmatic sellae defect, leading to compression and flattening of the pituitary gland. It is usually asymptomatic and mostly incidentally detected during neuroimaging for other conditions. There is no data reporting a case of primary ESS in a woman with metabolic syndromepresenting with syncopal attack.

Case report: A 62-year old, postmenopausal woman with metabolic syndrome, presented to our Endocrine clinic with the history of recurrent syncopal attack for the past 13 years and associated early morning headache and later diagnosed with primary empty sella syndrome.

Conclusion: Primary empty sella syndrome should be keenly investigated for with high index of suspicion in women with metabolic syndrome presenting with syncopal attack and headache.

Key words: Primary empty sella syndrome, Metabolic syndrome, Syncopal attack, Headache

NigerJmed 2019: 536-539

INTRODUCTION

Empty sella syndrome (ESS) is a disorder that is associated witharachnoid herniation through a diaphragmatic sellae defect with leakage of cerebrospinal fluid in the sella turcica, leading to compression and flattening of the pituitary gland. Most cases of ESS are idiopathic.

Empty sella syndrome is often asymptomatic and detected incidentally on pituitary neuroimaging for other disease conditions. Rarely, it presents with hormonal deficiencies, giddiness, vomiting, visual symptoms and persistent headache.Vikrant Ghatnatti et al reported hormonal deficiencies in about 50% of patients diagnosed with primary ESS in their case series with hyperprolactinaemia as the commonest endocrine abnormality whereas De Marinis and colleagues reported 19% incidence of endocrine abnormality in patients with primary ESS. Secondary ESS is usually caused by pituitary haemorrhage, infarction or surgery, radiation therapy, intracranial infections, autoimmune disorders and head injury.

Correspondence to: Dr. E. Musa
Department of Internal Medicine
College of Medicine, Kaduna State University,
Kaduna State - Nigeria
E-mail: ezemusa2000@gmail.com

Case Report

History: A 62-year old, female retired nurse with metabolic syndrome (obesity, hypertension, and impaired glucose tolerance), presented to our Endocrine clinic with the history of recurrent syncope for the

past 13 years with associated early morning headache. There was no associated vomiting, altered sensorium, personality change, and she was not known to be epileptic. No history suggestive of adrenal insufficiency, cardiac decompensation or gastrointestinal tract bleeding. She has never had trauma to the brain, pituitary surgery or radiation therapy prior to presentation. The patientwason lisinopril 2.5 mg daily and amlodipine 5 mg dailyfor her blood pressure control for the last 10 years.

Physical examination: She was morbidly obese (Body Mass Index = 40.8 kg/m^2). The pulse rate was normal and there was elevated blood pressure (BP) but no postural hypotension (BP – 140/100 mmHg sitting position, 150/100 mmHg standing position). There was no neurologic deficit andno peripheral features of Addison's disease.

Investigations: She had low serum cortisol levels (179.3 nmol/L) (random samples), sodium – 142 mmol/L, potassium – 4.0 mmol/L, bicarbonate – 25 mmol/L, urea – 3.8 mmol/L, and creatinine – 51 µmol/L. Her lipid profile includedtotal cholesterol-5.9 mmol/L (hypercholesterolaemia), low-density lipoprotein cholesterol – 4.85 mmol/L, triglycerides – 0.6 mmol/L, high-density lipoprotein cholesterol – 1.36 mmol/L) and glycated haemoglobin was 6.2%. The packed cell volume -38%, mean corpuscular volume -81fl, mean corpuscular haemoglobin - 27pg, mean corpuscular haemoglobin concentration - 33g/dl, and stool occult blood was negative. Oesophagogastroscopy showed foamy gastric juice and antral gastritis. Echocardiogram reported concentric remodeling and grade 1 diastolic dysfunction and focal slow waves were seen on an electroencephalogram (EEG).
The magnetic resonance imaging (MRI) of the brain showed empty pituitary fossa with the presence of cerebrospinal fluid intensity on all sequences and a centrally placed infundibulum (Infundibular sign) (figure 1).

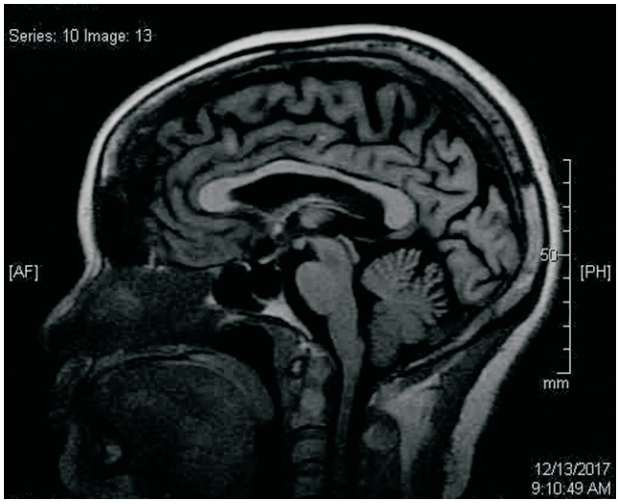

Figure 1. MRI Brain (T1 sagittal view) showing empty pituitary fossa and hypointensity in the region of pituitary fossa suggestive of CSF in the sella.
These findings were suggestive of primary empty sella syndrome in a patient with metabolic syndrome presenting with syncopal attacks.

Treatment: She was commenced on atorvastatin 20 mg nocte, metformin 500 mg twice daily, and clopidogrel 75 mg daily. She was counseled on lifestyle modification for weight and metabolic control. She remained clinically stable following the commencement of these medications and lifestyle modification.

Discussion

Primary empty sella syndrome is characterised by arachnoid herniation through a disruption in the diaphragmatic sellaewith eventual flattening of the pituitary gland.Studies have reported the prevalence of primary empty sella syndrome to be 8-35% in the general population with a 5:1 female preponderance. However, a reported prevalence of 5.5-12% was found at autopsy

and an incidence of 12% of cases by pituitary neuroimaging. Primary ESS is commonly seen in middle-aged women with obesity and hypertension. Ghatnatti et al reported that obesity is commoner in Primary ESS compared to secondary ESS while Kesler et al, reported that 70-80% of primary ESS case series were females who had obesity and hypertension. In this report, our patient was middle-aged, morbidly obese and hypertensive which is in keeping with the literature. A commonly proposed mechanism explaining the development of empty sella syndrome is obstructive sleep apnoea-associated hypercapnoea, a frequent complication of obesity which results to a rise in intracranial pressure.Also, Sinclair et al proposed that obesity can upregulate 11β-HSD1 an enzyme that stimulates cortisol synthesis by direct effect or through the elaboration of adipokines. This leads to hypercortisolism, a condition that causes intracranial hypertension via overproduction of cerebrospinal fluid (CSF) and diminished clearance of CSF.Morbid obesity is a likely predisposing factor for primary ESS in our patient.

Rarely, primary ESS presents with hormonal deficiency, but it is most commonly associated with headache, menstrual irregularities, galactorrhoea, and hirsutismas the presenting symptom. Inour report, headache was a prominent presenting symptom which is in keeping with other reports. The neurologic manifestations such as syncope, dizziness, seizure and cranial nerve deficits are present in 40% of primary ESS patients, and this is consistent with the of our patient's presentation with syncopal attack without a known aetiology.

De Marinis et al reported that half of the patients with Primary ESS have endocrine abnormalities. Additionally, a systematic review conducted by Auer et al reported a 52% prevalence of hormonal deficiencies in patients with primary ESS.They further found that multiple hormonal deficiencies are more frequent with a prevalence of 30% as compared to isolated hypopituitarism occurring in 21% of the PES cases, and growth hormone being the most frequently affected followed by gonadotropins. Secondary hypoadrenalism is another common complication of primary ESS. Although our patient had decreased random cortisol levels, clinical and biochemical parameters were not in keeping with hypocortisolism underscoring the importance of dynamic test when secondary hypoadrenalism is suspected. The possible mechanisms underlying pituitary hypofunction in primary ESS include a direct compression of the pituitary gland against the sella and pituitary stalk disturbance.

Conclusion

Primary empty sella syndrome is rare in our endocrine practice possibly due to the low rate of advanced neuroimaging in a low-resource setting like ours. A high index of suspicion for primary ESS is required in a morbidly obese middle-aged woman presenting with headache and syncopal attack. This may provide an opportunity to unravel an underlying hormonal deficiency as a potential complication of primary ESS.

References

1. McLachlan M, Williams E, Doyle F. Applied anatomy of the pituitary gland and fossa. A radiological and histopathological study based on 50 necropsies. *Br J Radiol*. 1968;41:782-8.
2. Bergland RM, Ray BS, Torack RM. Anatomical variations in the pituitary gland and adjacent structures in 225 human autopsy cases. *J Neurosurg*. 1968;28:93-9.
3. Ghatnatti V, Sarma D, Saikia U.

Empty sella syndrome–beyond being an incidental finding. *Indian J Endocr Metab*. 2012;16:321.
4. Web. Empty Sella Syndrome. Genetic and Rare Disease information Center (GARD) - An NCATS Program. rarediseasesinfonihgov.
5. De Marinis L, Bonadonna S, Bianchi A, Maira G, Giustina A. Primary empty sella. *J Clin Endocrinol Metab*. 2005;90:5471-7.
6. Kumar K, Khalid M, Fadhil A, Lamba P, Basha SA, Ibrahim SAEZM. Empty Sella Syndrome: A Case Report and Literature Review. *Neuroscience and Medicine*. 2015;6:42.
7. Degli Uberti EC, Teodori V, Trasforini G, Tamarozzi R, Margutti A, Bianconi M, et al. [The empty sella syndrome. Clinical, radiological and endocrinologic analysis in 20 cases]. *Minerva Endocrinol*. 1989;14:1-18.
8. Foresti M, Guidali A, Susanna P. [Primary empty sella. Incidence in 500 asymptomatic subjects examined with magnetic resonance]. *Radiol Med*. 1991;81:803-7.
9. Maira G, Anile C, Mangiola A. Primary empty sella syndrome in a series of 142 patients. *J Neurosurg*. 2005;103:831-6.
10. Busch W. [Morphology of sella turcica and its relation to the pituitary gland]. *Virchows Arch Pathol Anat Physiol Klin Med*. 1951;320:437-58.
11. Kaufman B. The "empty" sella turcica--a manifestation of the intrasellar subarachnoid space. *Radiology*. 1968;90:931-41.
12. Fouad W. Review of empty sella syndrome and its surgical management. *Alexandria J. Med*. 2011;47:139-47.
13. Kesler A, Goldhammer Y, Gadoth N. Do men with pseudomotor cerebri share the same characteristics as women? A retrospective review of 141 cases. *J Neuroophthalmol*. 2001;21:15-7.