

Addison's Disease in Pregnancy: Challenges, Management and Outcomes

S. Afzal¹, N. Seni¹, S. Giletta¹, M.S. Sadiq¹, E. Brosnan², S.R. Rizvi¹.

1. Department of General Internal Medicine, Mayo University Hospital, Westport Rd., Knockaphunta, Castlebar, Co. Mayo, Ireland.
2. Department of Endocrinology, Mayo University Hospital, Westport Rd., Knockaphunta, Castlebar, Co. Mayo, Ireland.

Abstract

Presentation

Addison's disease (AD) is rare in pregnancy but poses significant risks. This case highlights the importance of early diagnosis and management. A 34-year-old presented at six weeks of pregnancy with lethargy and persistent vomiting.

Diagnosis

Laboratory tests revealed hyperkalaemia, hyponatraemia, elevated ACTH, low cortisol and positive anti-adrenal antibodies.

Treatment

Hydrocortisone and fludrocortisone therapy resolved her symptoms, with dosage adjustments during pregnancy and delivery.

Discussion

AD in pregnancy is life-threatening if undiagnosed. Differentiation from hyperemesis gravidarum (HG) is crucial. Early recognition and multidisciplinary management improve maternal and foetal outcomes.

Introduction

Addison's Disease (AD) is a rare disorder characterized by deficiency of glucocorticoids and mineralocorticoids. Its prevalence in pregnancy is between 5.6 and 9.6 per 100,000 pregnancies⁹. Diagnosis can be challenging because its symptoms often overlap with normal physiological changes of pregnancy, including conditions like hyperemesis gravidarum. Early recognition and appropriate management are crucial to prevent life-threatening adrenal crisis and to achieve good maternal and foetal outcomes. We report the case of a 34-year-old

pregnant woman who presented with nonspecific symptoms, highlighting the diagnostic and management challenges encountered.

Case Report

A 34-year-old woman presented at six-weeks gestation with persistent vomiting. Family history included autoimmune diseases. Her only medication was omeprazole.

On examination she was hypotensive, with blood pressure 90/60mmHg, but was otherwise vitally stable, dry mucosae was also noted. Blood tests showed hyponatraemia and mild hyperkalaemia (Table-1). Urinalysis showed Sodium 97.5 mmol/L and osmolality 748 mOsm/kg.

HG and SIADH were initially suspected. She received IV fluids and fluid restriction. However, sodium levels and blood pressure remained low, prompting suspicion of AD.

A Short-Synacthen Test (SST) confirmed adrenal insufficiency; cortisol was 67 nmol/L at baseline with rise to 71 nmol/L post-SST. ACTH was elevated and anti-adrenal antibodies tested positive, confirming primary adrenal insufficiency.

IV hydrocortisone and fludrocortisone were started. Sodium improved, and she was discharged after receiving an alert bracelet and sick-days rule education. Early follow-up showed normalisation of electrolytes. Concomitant autoimmune diseases were ruled out. She reported significant improvement since starting the treatment, and continued endocrine and obstetric follow-up.

Patient was admitted in active labour at 37-weeks gestation and commenced on intravenous stress-dose hydrocortisone (Table-2). She subsequently underwent a lower segment Caesarean section (LSCS) without intraoperative/postoperative complications. A healthy male infant was delivered, with an APGAR score of 9 at 1 minute and 10 at 5 minutes. Birth weight was 3900g. She was reviewed by the endocrinology team and, after 72 hours, was transitioned to maintenance dose of oral corticosteroids via a slow-taper. Both maternal and neonatal outcomes were favourable.

	On admission	After steroids administration	At 2 weeks follow-up	Normal values
Sodium	121	129	135	136 – 146 mmol/l
Potassium	5.3	4.1	4.3	3.5 - 5.1 mmol/l
Glucose	3.8	6.6	4.4	4.1 - 7.8 mmol/l
Creatinine	44	44	43	49 – 90 umol/l
Cortisol	67			nmol/L
Serum Osmolality	251			285 – 295 mOsm/kg
Free T4	13.72			7.86 – 16.29 pmol/l
TSH	5.23			0.38 – 5.33 mIU/L
ACTH	1198			7 – 63 ng/L
Anti-adrenal antibodies	160			U/ml

Table-1: Laboratory results

	1 st trimester (PO)	2 nd trimester (PO)	3 rd trimester (PO)	At labour induction (IV)	Post-delivery (IV)	Maintenance dose (PO)
Hydrocortisone	10mg BD	10mg BD	15mg mane; 10mg at noon; 10mg tarde.	100mg TDS	100 mg TDS for 48 hours; then tapering to 50 mg TDS for 2 days.	10mg BD
Fludrocortisone	0.1mg OD	0.1mg OD	-	-	0.1 mg OD PO	0.1 mg OD

Table-2: Steroids dosing

Discussion

AD in pregnancy is rare², however early detection is crucial to prevent complications. Presentation of AD can mimic early symptoms of pregnancy and clinical manifestations can overlap with conditions like HG and SIADH.

Initial investigations should include electrolytes, glucose, renal and liver profiles, and thyroid function. Cortisol and CBG levels are physiologically progressively raised during pregnancy, but reference cortisol values in pregnancy have yet to be established.⁸

Although HG and AD can coexist in early stages of pregnancy, several characteristics can help differentiate them. Severe nausea, vomiting, and metabolic alkalosis are hallmarks of HG before 16-weeks gestation, while disproportionate hyponatraemia/glycemia, hyperkalaemia, or postural-hypotension should raise suspicions of AD if symptoms persist despite standard treatment. In HG, cortisol is usually elevated due to stress response, while in AD it is inappropriately low. SIADH results in hyponatraemia due to water retention and does not result in cortisol deficiency or hyperkalaemia.

Management should not be delayed in unstable patients as IV hydrocortisone is safe in pregnancy. Pregnant women with AD are at higher risk for the following adverse outcomes: maternal mortality, preterm, and caesarean section deliveries.² Our patient also had similar outcome as she underwent LSCS and delivered a healthy full-term male infant.

Multidisciplinary approach with endocrinology and obstetrics is essential. Patients need regular monitoring of electrolytes, cortisol, and individualized management to accommodate physiological changes. Adjustments in the pharmacologic regimen are required⁶, including increasing corticosteroid dosage in the third trimester and optimizing stress-dose steroids during labour and delivery.

Although there are limitations, such as generalisability, this single patient focused study highlights the need for vigilance in persistent/atypical HG and unexplained hyponatraemia. Monitoring for electrolyte imbalances and symptoms such as postural hypotension ensure timely diagnosis, essential for optimal management and best maternal-foetal outcomes.

Declarations of Conflicts of Interest:

None declared. This is single-patient case report conducted in accordance with CARE guidelines. Patient approved through a written consent form and institutional Review Board approval was not required.

Corresponding author:

Nikitha Seni

Department of General Internal Medicine,
Mayo University Hospital,

Westport Rd.,
Knockaphunta,
Castlebar,
Co. Mayo

E-Mail: nikithaseni99@gmail.com

References:

1. Barthel A, Benker G, Berens K, Diederich S, Manfras B, Gruber M, et al. An update on Addison's disease. *Experimental and Clinical Endocrinology & Diabetes* [Internet]. 2019;127(02/03):165–75. Available from: <https://www.thieme-connect.com/products/ejournals/html/10.1055/a-0804-2715>
2. Schneiderman M, Czuzoj-Shulman N, Spence A, Abenhaim H. Maternal and neonatal outcomes of pregnancies in women with Addison's disease: a population-based cohort study on 7.7 million births. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2016 Dec 15;124(11):1772–9.
3. Manoharan M, Sinha P, Sibtain S. Adrenal disorders in pregnancy, labour and postpartum - an overview. *Journal of obstetrics and gynaecology*. 2020;40:749–758. doi: 10.1080/01443615.2019.1648395. Cited: in: PMID: 31469031..
4. Hoorn EJ, van der Lubbe N, Zietse R. SIADH and hyponatraemia: why does it matter? *Clinical Kidney Journal*. 2009 Oct 16;2(suppl 3):iii5–11.
5. Betterle C, Presotto F, Furmaniak J. Epidemiology, pathogenesis, and diagnosis of Addison's disease in adults. *Journal of Endocrinological Investigation* [Internet]. 2019 Dec 1;42(12):1407–33. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/31321757>
6. Margulies SL, Corrigan K, Bathgate S, Macri C. Addison's Disease in pregnancy: Case report, management, and review of the literature. *Journal of Neonatal-Perinatal Medicine*. 2019 Nov 11;13(2):275–8. doi:10.3233/npm-190231
7. Green D, Dineen R, O'Reilly MW, Sherlock M. Fertility and pregnancy in adrenal insufficiency. *Endocr Connect*. 2024 Jan 12;13(2):e230088. doi: 10.1530/EC-23-0088. PMID: 38038998; PMCID: PMC10831551.
8. MacKinnon R, Eubanks A, Shay K, Belson B. Diagnosing and managing adrenal crisis in pregnancy: A case report. *Case Rep Womens Health*. 2021;29(e00278):e00278
9. Diaouga HS, Assadick OZ, Yacouba MC, Oumara M, Guédé S, Adamou A, et al. What is the materno-fetal prognosis of adrenal insufficiency and pregnancy in low-resource setting? a case report. *Annals of Medicine and Surgery*. 2024 Apr 22;86(6):3713–6.