Case Report

Preeclampsia: A Possible Complication of Primary Hyperparathyroidism

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Received 7 April 2016; Revised 27 April 2016; Accepted 5 May 2016

1. Introduction

Primary hyperparathyroidism is considered a relatively common endocrine disorder. It is the third most common endocrine disorder with a prevalence of 0.1–0.4% in the general population following diabetes and thyroid disorders [1]. However, primary hyperparathyroidism in pregnancy is rare [2]. The incidence of primary hyperparathyroidism in pregnancy is around 8 cases annually per 100,000 of population [2].

Several studies and reports published in the literature showed that there is a possible association between primary hyperparathyroidism and preeclampsia. A recent study done by Hultin et al. showed that women with primary hyperparathyroidism are 6 times more likely to develop preeclampsia [3]. Another review of 16 primary hyperparathyroidism cases concluded that 25% is the occurrence of preeclampsia among studied women [4]. In this paper, we report a case of primary hyperparathyroidism and preeclampsia demonstrating the yield of the surgical intervention in such cases.

2. Case

A 28-year-old woman (gravida 2, para 0, and abortus 1) at 27th week of gestation was referred from a general practitioner's office to the emergency department (ER) of a tertiary care hospital (King Khalid National Guard Hospital, Jeddah, Saudi Arabia) owing to an incidental finding of elevated blood pressure (BP) levels (194/115 mmHg). The patient complained of headache and epigastric pain, with elevated BP and proteinuria. The fetal nonstress test was "nonreassuring." Subsequently, she had an emergency cesarean delivery and surgical removal of the adenoma. The mother and her newborn were then transferred to intensive care, where their clinical course was unremarkable. The mother was discharged after 3 days, while the neonate stayed for close observation for 60 days.
of 48 h). At that time, she did not complain of any signs or symptoms indicative of preeclampsia. Hence, her diagnosis shifted to gestational hypertension. She was subsequently transferred to the antenatal care ward for observation and further workup. The patient was started on a low-salt diet. MgSO4 therapy was discontinued, and she was managed with 200 mg of labetalol administered twice daily.

The day after admission, an elevated adjusted calcium level (2.97 mmol/L) was incidentally detected on routine laboratory results (reference range, 2.1–2.55 mmol/L). Further workup revealed an elevated serum parathyroid hormone (PTH) level (296 pg/mL, reference range 24–114 pg/mL). Ultrasonographic examination of the neck revealed the presence of left inferior parathyroid adenoma (Figure 1). She was diagnosed with primary hyperparathyroidism and treatment was initiated with 125 mL/hour of intravenous normal saline. All calcium supplements were discontinued. Consultation was obtained from otolaryngology team, and surgical resection of the adenoma was scheduled.

On the sixth day of hospitalization, the patient complained of headache and epigastric pain. Her BP was 141/87 mmHg, temperature 37.2 Celsius, pulse 85 beats per minute, and respiratory rate 18 breaths per minute with normal oxygen saturation on room air (97%). 24-hour urine collection revealed 827 mg of protein. Complete blood count, liver and kidney function tests, and coagulation profile were all within normal limits. The patient was clinically well tolerated, and a 60-day stay was anticipated. The baby was normocalcemic with no signs of tetany. Postoperatively, the mother had a normal serum PTH (58 pg/mL) and adjusted calcium levels (2.50 mmol/L). The patient was discharged about 2.3 × 1 × 0.8 cm suggestive of parathyroid adenoma.

3. Discussion
Primary hyperparathyroidism is defined as an elevated PTH level caused by increased production from an adenoma, benign tumor, or malignant tumor of the parathyroid glands. Primary hyperparathyroidism can present with a wide range of symptoms from nonspecific discomfort (e.g., nausea, vomiting, and fatigue) to end-organ damage [5, 6]. Though primary hyperparathyroidism is a relatively common disorder in the general population, it is considered rare in pregnancy [1, 2]. Primary hyperparathyroidism diagnosis can be challenging during pregnancy since increased calcium levels might be masked [5].

Preeclampsia is defined as new-onset of high BP and proteinuria after 20 weeks of pregnancy. Clinically, women with preeclampsia present with a variety of signs and symptoms such as generalized edema, headache, visual disturbance, and abdominal pain [3]. It is suggested that primary hyperparathyroidism and preeclampsia are independent and unrelated disorders [7]. On the other hand, others proposed that they are closely related and that preeclampsia might persist after delivery among patients with primary hyperparathyroidism [3–5]. The link between hyperparathyroidism and hypertensive disorders is proposed to be related to the interaction of PTH with the renin-aldosterone system, the sympathetic nervous system, and the vascular endothelium [5, 7].

Severe hypertension and preeclampsia in patients with primary hyperparathyroidism can lead to severe complications, including intracerebral hemorrhage, retinal hemorrhage, parathyroid hemorrhage, and hypertensive crisis [5, 7]. However, published data have reported favorable maternal outcomes with prompt diagnosis and management of hyperparathyroidism and preeclampsia [5–7]. Fetal or neonatal outcomes are highly variable and dependent on the maternal condition, the week of gestation, the degree of hypocalcemia, and the availability of specialist intensive care units [8–11].

Currently, there are no guidelines available for the treatment of primary hyperparathyroidism during pregnancy [12]. Therefore, the treatment plan should be individualized depending on the symptoms, the estimated risk to the health of both the mother and her fetus, and the gestational age [6]. Conservative options and pharmacological agents include rehydration, calcitonin (pregnancy category C), bisphosphonates (pregnancy category D), and cinacalcet (pregnancy category C). However, similar to the nonpregnant population, surgical parathyroidectomy is the only cure [4, 6]. The optimum timing of surgery during pregnancy is not rigid; however, intervention during the second trimester is preferable [6].

This patient presented in the early weeks of the third trimester of pregnancy and this is consistent with other cases reported in the literature [8–11]. She had an insidious onset of preeclampsia following hyperparathyroidism. Other reported cases presented initially with nausea, vomiting, and hyperemesis [7], abdominal pain [5], headache [11], and hypertension [8–11]. Postpartum course of the mother went smooth and uneventful after appropriate management by
the treating multidisciplinary team. The baby condition was complicated by low birth weight and asymmetrical IUGR which was expected from the overall pregnancy circumstances as in other reports [8–10]. Hence, primary hyperparathyroidism poses a risk for preterm delivery.

4. Conclusion

The association between primary hyperparathyroidism and preeclampsia is increasingly being recognized. We are reporting this case to increase the awareness of healthcare providers who take care of pregnant ladies about the possibility that primary hyperparathyroidism could be a risk factor for preeclampsia. Further research is needed to discover the pathophysiology, possible presentations, appropriate management, and prevention of such cases.

Competing Interests

The authors have no competing interests to report.

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