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Pregnancy Management and Outcome in Parkinson's Disease in Riyadh, Saudi Arabia: A Case Report

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Case Report
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Abstract

Background: Parkinson's disease is a rare disease among pregnant ones. Previous studies reported that there might be a worsening of PD symptom intensity associated with pregnancy. Here we presented the first pregnant case with Parkinson's disease in King Abdulaziz medical city (KAMC)in Riyadh, Saudi Arabia and studying the case management and outcomes.

Case Presentation: our case is a 36-year-old female, known case of Parkinson's disease, who was admitted at 33 weeks of gestation with a complaint of increased severity of tremor along with mild rigidity and bradykinesia. Her anatomy scan, serology, glucose tolerance test (GTT) were all normal apart from iron deficiency anemia. She was well controlled on proponalol, which stopped at 16 weeks of gestation when she was recommended for Carbidopa/levodopa. She delivered a preterm baby girl weighing 2.73kgs at 36 weeks + 6 with no complications.

Keywords: Pregnancy; Parkinson's disease; Outcomes; Management; Case Report

Abbreviations: PD: Parkinson's Disease; KAMC: King Abdulaziz Medical City; PPH: Postpartum Hemorrhage; GTT: Glucose Tolerance Test; TVTO: Tension Free-Vaginal Obturator Tape; APVR: Anomalous Pulmonary Venous Return; CTG: Cardiotocography; APGAR: Appearance, Pulse, Grimace, Activity, and Respiration; PET: Positron Emission Tomography; SPECT: Single-Photon Emission Computed Tomography; ET: Essential Tremor; FDA: Food and Drug Administration; COMTIs: Catechol-O-Methyltransferase; GTT: Glucose Tolerance Test.

Introduction

Parkinson's disease (PD) is the second ordered prevalent neurodegenerative disease produced by the degeneration of dopaminergic neurons in the substantia nigra pars compacta of the midbrain [1]. The prevalence of PD in Saudi Arabia has been estimated to be 27 per 100,000 populations [2]. The pregnancy incidence in PD women isn't clear, although this may increase by increasing maternal age [3]. For approximately half of the females with PD, symptoms appear to get worse through gestation. The risk of decline is less when dopaminergic therapy is continued and needed to be adjusted throughout pregnancy [4]. Up to the time of this case written, only 51 cases was reported in the literature. The consequence of this rare clinical scenario will help ask critical questions concerning the PD effect on pregnancy and the potential enhance of PD therapy on fetal development.

Case Presentation

The patient is a 36-year-old G6P5+0 female, known case of essential tremor with the spectrum of Parkinson's disease, who was admitted in King Abdulaziz medical city (KAMC) through the clinic at 33 weeks of gestation with a complaint of increased severity of tremor (occurring both during activity

and at rest) along with mild rigidity and bradykinesia that were significantly affecting her day-to-day activities.

On taking her history, she was first diagnosed with an essential tremor at the age of 24 years, which was well controlled on Proponalol 80mg BID. The tremor that occurred both during the action and at rest was bilateral and had a greater severity on the left side. She displayed a normal gait with no cerebellar or pyramidal signs and had a normal MRI study.

Her past obstetric history includes four full-term SVD's and one full term C-sections. The first four deliveries were uneventful, and the last delivery, which was five years ago, was complicated by postpartum hemorrhage (PPH) and also ovarian thrombosis one-week post-delivery.

She was seen initially at 16 weeks in our outpatient clinic and was followed up regularly at the high-risk medical disorder clinic. Her antenatal work up including anatomy scan, serology, glucose tolerance test (GTT) were all normal apart from Iron-deficiency Anemia, for which she was started on IV iron. She had a previous cesarean section due to her recent vaginal repair surgery Tension Free-Vaginal Obturator Tape (TVTO) and anomalous pulmonary venous return (APVR) done five years ago.

The mother antepartum course of propranolol-80 mg and carbidopa 2 mg/levodopa 100 mg was insignificant except for increased complaints of worsening of tremor frequency and bradykinesia, which were attributed to her non-compliance with her medication, which she stopped at 16 weeks of gestation, due to her fear of these medications on her baby. Her neurologist later on added Carbidopa/levodopa to her existing medications in March 2019 due to the atypical parkinsonian like features of her tremor and was given the diagnosis of essential tremor with a spectrum of Parkinson's disease.

At 33 weeks of gestation, she presented with all three hallmark features of Parkinson's disease - bradykinesia and bilateral rigidity, more severe on the left side. The neurologist confirmed her diagnosis, like Parkinson's, and started her on Inderal and sinemnt 1.5 TID. The patient's symptoms were relieved, and her cardiotocography (CTG) showed normal fetal movements, so she was given enoxaparin 40 mg (subcutaneous) and then discharged with the advice to continue her treatment. Then at 36 weeks+6 days, she came to the emergency department with lower abdominal pain and CTG showing contractions. She was taken for an emergency C/S and delivered a preterm baby girl weighing 2.73kgs on 36 weeks + 6 with no complications. Her Appearance, Pulse, Grimace, Activity, and Respiration (APGAR) scores were 8 and 9 at one and 5 minutes, respectively. The baby was then shifted to the Special Care Burden Unit. After two days, the patient was stable and discharged and prescribed her treatment for Parkinson along with thromboprophylaxis.

Discussion

PD is an age-related disease, so pregnancy during its occurrence is rare, and reports are restricted. Our case reported the first pregnant case diagnosed with PD in Saudi Arabia. PD is characterized by bradykinesia combined with one more manifestation, including rigidity of muscles, rest tremor, or postural instability [5]. The mechanism holding a worsening of symptoms during pregnancy is likely multifactorial, including hormonal changes, physiological changes resulting in altered pharmacokinetics, and physical and social stress [3]. Our case was a known case of Parkinson's disease, who was admitted through the clinic at 33 weeks of gestation with a complaint of increased severity of tremor along with mild rigidity and bradykinesia.

Brain imaging studies using both positron emission tomography scan (PET) and single-photon emission computed tomography (SPECT) can distinguish those subjects with PD from normal controls with greater than 95% sensitivity [6]. The cardiotocograph (CTG) is a continuous automated recording of the baby's heartbeats gained through an ultrasound transducer placed on the mother's abdomen [7]. Regarding our case, she was young a Parkinson's disease pregnant woman, so the fetus status was monitored using CTG, which reported normal fetal movements.

Essential tremor (ET) is identified as bilateral but systematic kinetic and postural tremors of the voice, upper limbs, head, face, chin, legs, or a mixture of those symptoms [8]. Propranolol isn't a specific beta-adrenergic receptor blocking drug, maintaining no other autonomic nervous system activity. As of 2018, propranolol is the first-line medications for the treatment of primary tremor, according to the US Food and Drug Administration (FDA) and the European Medicines Agency [9]. Babies whose mothers got propranolol (Inderal) at parturition have exhibited bradycardia, hypoglycemia, and/or respiratory depression [10]. Propranolol is recommended in pregnancy only if the potential benefit maintains the probable risk to the embryo [10]. In our case the ET was controlled on Proponalol 80mg BID, which she stopped at 16 weeks of gestation to avoid medication side effects.

Most PD cases require levodopa therapy within two years of symptom occurrence. Levodopa, the most efficient medication in PD therapy, is almost continually linked with carbidopa or benserazide, aromatic acid decarboxylase inhibitors that inhibit its peripheral metabolism and particularly decrease the risk of nausea [11]. The

antiparkinsonian effectiveness of levodopa is so expected that a positive curative response is used to support the diagnosis of PD [12]. In addition to levodopa, there are many other drugs used for the PD-related motor symptoms treatment: anticholinergics, amantadine, MAOIs, catechol-O-methyltransferase (COMTIs), dopamine agonists, and istradefylline [13]. The anti-parkinsonian effect in pregnancy has been best reported for levodopa/carbidopa, with no sign of significant fetal anomalies and few complications related to pregnancy [3]. Regarding our case, at 16 weeks of gestation, our case neurologist later on added Carbidopa/levodopa to her existing medications till the pregnancy period ended. After two days of labor, the patient was stable and discharged and prescribed her treatment for Parkinson along with thromboprophylaxis.

To date, there is no evidence to suggest higher rates of fetal or maternal complications, fertility difficulties, or birth-related complications in women with PD [14]. Earlier menopause and longer cumulative length of pregnancies have been shown to increase PD risk, while the association with post-menopausal hormone use and oral contraceptives has been inconsistent [15]. The challenges facing new mothers with PD are poorly understood, with deteriorating fine motor skills often presenting functional difficulties in undertaking daily tasks. Decisions relating to breastfeeding are complicated by limited information regarding the potential risk of medication to infants, although plasma and breast milk levodopa concentrations in a single study estimated the level of exposure to be low (0.016–0.023 mg/kg/day) [16].

Conclusion

This is the first case report to be reported in Saudi Arabia that sheds light on pregnancy in PD and the therapeutic safety of anti PD drugs. Not only did Parkinson's disease have no adverse effect on her current and previous pregnancies, her PD symptoms too showed significant improvement during pregnancy. In conclusion, patients with PD are a high-risk pregnant population. They must have preconception counseling regarding PD management and regular antenatal care during pregnancy by a multidisciplinary team with an obstetrician and neurologist on board. So, we need more cases to be reported to share the valuable management options.

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