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Pregnancy in Parkinson's disease with *PARK2* mutations

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Parkinson's disease (PD), first described by James Parkinson in 1817, is the second most common neurodegenerative disorder, affecting approximately 1% of the population over age 50 worldwide. Parkinson's disease is an old-age disease. Consequently, it is difficult to find literature on pregnancy in PD. Pregnancy in PD is uncommon, with only 51 pregnancies reported in the medical literature until now [1–12]. PD is less common in women than men with a ratio up to 1:2 reported in the literature. PD is characterized by mainly by resting tremor, bradykinesia, rigidity, and gait impairment. It is well-known that antiparkinsonian medications are based on symptomatic relief only, neuroprotective and disease-modifying therapies are not available yet [13,14].

Here we describe a patient diagnosed as Parkinson's disease at the age of 34 who had three silent and two missense mutations of *PARK2* gene [15] (GenBank accession number EF375726). Three silent mutations were detected at bases 429 (C > T), 513 (G > A) and 667 (C > T). The missense mutations detected at bases 932 (A > G) and 1111 (G > A) replace Gln311 with Arg and Ala371 with Thr respectively. In this communication, we discuss the effect of the disease on the pregnancy and vice versa, and the effect of the disease and its treatment on the fetus. The study was approved by the ethics committee of the Kocaeli University and informed consent was obtained from the patient.

The 38 years old patient, 6 years ago in 2003, gave birth to a healthy boy. Two years later, she was diagnosed with early-onset PD in 2005, aged 34 years, presenting rigidity and tremor. She was prescribed Stalevo (Levodopa 100 mg, carbidopa 25 mg, entacapone 200 mg) 100 mg 5 times daily; Azilect (Rasajiline) 1 mg per day; and Pexola (Pramipexole) 1 mg 3 times daily. Her laboratory results and MR findings were normal. During her treatment for Parkinson's disease, when she had severe symptoms of the disease, she occasionally became depressed. In addition to the previously described treatment, she was also treated for depression with Lustral (sertraline) 100 mg per day, Remeron (Mirtazapine) 30 mg per day. Meanwhile, her treatment was reassessed with COMT H/H and MAOB A/G genotypes.

On 2 March 2009, she was diagnosed as pregnant. Her neurological evaluation did not reveal any abnormality. Three weeks later, she informed her neurologist (Dr. HA Idrisoglu) that she had miscarriage in 2009 in the first trimester.

Several conclusions can be drawn from this case. First, her pregnancy did not have any adverse effect on her Parkinson's disease or treatment. Moreover, her Hoehn and Yahr score showed significant improvement from stage 3 to 1. And also, her UPDRS (Unified Parkinson's disease rating scale) improved drastically from 32 to 6 [16]. Second, she went through her first pregnancy two years earlier that her Parkinson's disease was first diagnosed. Subsequently, we discovered that she has the *PARK2* gene mutations. Third, consequently, Parkinson's disease does not have adverse effects on pregnancy. Fourth, the medication used in the treatment of Parkinson's disease may cause skeleton malformation and spontaneous abortion [17,18].

Declaration of competing interest

There are no conflicts of interest to declare.

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