Role of Ropinirole for the treatment of early Parkinson's disease. A review of literature

Dr Navodaya Salwe [1], Dr Prashant Devkare[2], Shruti Dharmadhikari [1], Dr Chintan Khandhedia [1], Dr Amey Mane [1], Dr Suyog Mehta [1]

Affiliations: Sun Pharma Laboratories Ltd., Mumbai; 2. Sun Pharmaceutical Industries Ltd., Mumbai

Poster presented at 32nd Annual Conference of Indian Academy of Neurology held at Varanasi, India between 29th Oct – 2nd Nov,2025

Introduction

- Early-onset Parkinson's disease (EOPD) is defined as PD with an age of onset after 21 years of age but before 50 years.[1]

- Prevalence of Parkinsonism was found to be 45.82 per 100,000 with 40–45% experiencing the onset of motor symptoms between the ages of 22 and 49. [2]

- **Oxidative metabolism and free radical generation are implicated in the pathogenesis of Parkinson's disease**. Elevated dopamine turnover, particularly from L-dopa administration, leads to the production of reactive oxygen species such as hydrogen peroxide and hydroxyl radicals, exacerbating neurodegeneration. Consequently, chronic L-dopa therapy may accelerate dopaminergic neuronal loss and contribute to motor complications, including fluctuations, dyskinesias, confusion, and hallucinations. Motor complications occurs in 30–40% of patients with Levodopa within the first 5 years of treatment.[3]

- **Dopamine agonists may offer neuroprotective benefits.** Imaging studies of striatal dopaminergic function suggest that agents like ropinirole can delay the onset of motor complications. A comprehensive evidence-based review has demonstrated that ropinirole is superior to levodopa in postponing motor fluctuations and dyskinesias.[3, 4]

Aims

- To assess the efficacy of ropinirole in Early onset Parkinson disease as measured by UPDRS III (Motor) scale within 3 years.
- To assess the safety of ropinirole in Early onset Parkinson disease. (Adverse events)

Methods

- PubMed and Google Scholar search performed in April 2025 using the key words ‘Early-onset Parkinson's disease, ropinirole, UPDRS III, and Safety between 1997–2024

Keywords

- Early-onset Parkinson's disease
- Ropinirole
- UPDRS Motor score
- Safety

Poster presented at 32nd Annual Conference of Indian Academy of Neurology held at Varanasi, India between 29th Oct – 2nd Nov,2025

Results of Ropinirole in EOPD

UPDRS 3 Score	6 months Immediate release (IR)		8 months Immediate release	36 months Immediate release		8 months Prolonged release
C.H. Adler et al N =116 - ropinirole, 125- placebo	Ropinirole B = 17.9 E = 13.4 % I = 25	Placebo B - 17.7 E – 17.9 % I = -3				
Stocchi F et al N = 161 patients			Ropinirole B = 21 E = 13.9 % I = 33			Ropinirole PR B = 20 E = 9 % I = 55
Korczyn AD et al N = 335 168 - ropinirole 167 - bromocriptine.				Ropinirole B = 23.3 E = 15.7 % I = 31	Bromocriptine B = 21.1 E = 17.5 % I = 22	

Ropinirole showed greater improvements in motor function as measured by UPDRS score and was well–tolerated

- Multiple clinical studies have demonstrated the efficacy of ropinirole in improving motor function in patients with early-onset Parkinson's disease (EOPD), as measured by the Unified Parkinson's Disease Rating Scale (UPDRS) Part III.
- In a 6-month randomized, double-blind, placebo-controlled trial by Adler et al., ropinirole-treated patients showed a 25% improvement in UPDRS motor scores compared to a −3% change in the placebo group ($p < 0.001$).[3]
- Furthermore, Stocchi et al. demonstrated superior efficacy of ropinirole prolonged-release (55% improvement) compared to immediate-release formulation (33%) over 8 months.[5]
- Similarly, a 3-year study by Korczyn et al. reported a 31% improvement in motor scores with ropinirole versus 22% with bromocriptine.[6]
- The most common side effects were nausea, somnolence, dizziness, headache, constipation

Conclusion

- Patients treated with ropinirole experienced a significant improvement in motor function compared with placebo and levodopa, as measured by UPDRS motor score. It also demonstrated a favorable safety and tolerability profile

- These findings support the preferential use of ropinirole as a first-line therapy in patients with EOPD and may offer long-term benefits in disease progression and quality of life.

References:

1. Bhidayasiri R, Udomsirithamrong O, de Leon A, Maetzler W, Pilotto A. Empowering the management of early-onset Parkinson's disease: The role of technology. Parkinsonism Relat Disord. 2024 Dec;129:107052.
2. Poplawska-Domaszewicz K, Qamar MA, Falup Pecurariu C, Chaudhuri KR. Recognition and characterising non-motor profile in early onset Parkinson's disease (EOPD). Parkinsonism Relat Disord. 2024 Dec;129:107123.
3. Adler CH, Sethi KD, Hauser RA, Davis TL, Hammerstad JP, Bertoni J, et al. Ropinirole for the treatment of early Parkinson's disease. Neurology. 1997 Aug 1;49(2):393–9
4. Inzelberg R, Schechtman E, Nisipeanu P. Cabergoline, pramipexole and ropinirole used as monotherapy in early Parkinson's disease: an evidence-based comparison. Drugs & aging [Internet]. 2003 [cited 2019 Dec 10];20(11):847–55.
5. Stocchi F, Hersh BP, Scott BL, Nausieda PA, Giorgi L. Ropinirole 24-hour prolonged release and ropinirole immediate release in early Parkinson's disease: a randomized, double-blind, non-inferiority crossover study. Current Medical Research and Opinion. 2008 Sep 2;24(10):2883–95.
6. Korczyn AD, Brunt ER, Larsen JP, Nagy Z, Poewe WH, Ruggieri S. A 3-year randomized trial of ropinirole and bromocriptine in early Parkinson's disease. The 053 Study Group. Neurology. 1999 Jul 22;53(2):364-70. doi: 10.1212/wnl.53.2.364. Erratum in: Neurology 1999 Sep 22;53(5):1162. PMID: 10430427.