

Supplementary Material

Parkinsonism-Hyperpyrexia Syndrome and Dyskinesia-Hyperpyrexia Syndrome in Parkinson’s Disease: Two Cases and Literature Review

Supplementary Table 1. Overview of PD patients with PHS

| Report | Age/ sex | Season | PD duration (y) | Medication (mg/day) | Suspected trigger | Symptoms | Treatment | Symptoms duration | Outcome ^a |
|--------|-------------|--------|-----------------------|--|--|---|---|----------------------|--|
| [9] | 63/F | Spring | 1 | Levodopa 600 Carbidopa 60 Amantidine 600 Biperiden 6 | Abrupt withdrawal of antiparkinsonian medication | Disorientation, fever, diaphoresis, mute, rigidity, incontinence, severe tremor | Reinstitution of levodopa and carbidopa | 25 days | Recovered |
| [10] | 51/M | Summer | 9 | Levodopa 750 Carbidopa 75 Diphenylhydramine 200 | Levodopa withdrawal | Severe tremor, rigidity, bradykinesia, fever, sweating, disorientation, dysarthria | Reinstitution of the antiparkinsonian medications, ice packs, cooling blankets, antibiotic | 15 days | Death (Hyperthermic coma and respiratory failure) |
| [11] | 71/M | Winter | 10 | Levodopa 400 Carbidopa 100 Biperiden hydrochloride 4 Diazepam 5 | Reduction of levodopa and carbidopa | Fever, increased rigidity and tremor, diaphoresis, tachypnea, tachycardia, comatose, hypotensive | Atropine sulfate, epinephrine, sodium bicarbonate, carbidopa levodopa, benztropine | 7 Days | Death (Renal failure, hypotension and aspiration pneumonia) |
| | 64/M | Summer | 25 | Left thalamotomy Levodopa 400 Carbidopa 100 | Reduction of levodopa and carbidopa | Fever, mild disorientation, worsening tremor, rigidity and bradykinesia, severe diaphoresis | Reinstitution of levodopa and carbidopa | 2 weeks | Recovered |
| | 70/M | NA | 7 | Levodopa 1300 Carbidopa 130 | Reduction of levodopa and carbidopa | Confused, fever, increased rigidity | Reinstitution of levodopa and carbidopa | Over 3 days | Recovered |

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|------|------|--------------|----|---|--|--|---|---------------------|--|
| [12] | 62/M | NA | 12 | Levodopa 2100 Carbidopa 300 Amantadine 200 Lithium carbonate 900 | Experience one of the "Off" state | Fever, sweating, stiff, incoherent, tremor, and rigidity | Intravenous diazepam and dantrolene, physical antipyretic measures, antibiotic, dopamine | 10 hours | Death (Hyperthermic coma, hypotension and renal failure) |
| [13] | 76/F | Autumn | 3 | Levodopa 150 Benserazide 37.5 | Levodopa and benserazide withdrawal | Confusional state, fever, stimulus-sensitive myoclonic jerks, severe blepharospasm, axial dystonia, rigidity | Reintroduction of levodopa, benserazide, and dantrolene sodium | A few days | Recovered |
| [14] | 75/M | NA | NA | Levodopa 300 Carbidopa 75 Amantadine 200 | Discontinued carbidopa/levodopa | Confusion, severe tremor and rigidity, fever, diaphoresis, tachypnea | Bromocriptine mesylate therapy, broad-spectrum antibiotic therapy, reintroduction of carbidopa/levodopa | NA | Recovered |
| | 67/F | NA | NA | Levodopa 1000 Carbidopa 100 Haloperidol 2 Cyclobenzaprine 30 | Withdrawal of levodopa | Severe tremor, fever, mute, diaphoresis, rigidity, tachypnea, tachycardia | Broad spectrum antibiotic therapy, carbidopa/levodopa | A few days | Recovered |
| | 64/M | NA | 7 | Levodopa 1000 Carbidopa 100 Benzotropine 2 Trihexyphenidyl 4 | Withdrawal of antiparkinsonian medication | Fever, increasing rigidity, worsened tremor, decreased verbal output, diaphoresis | Bromocriptine and dantrolene sodium, reintroduction of carbidopa/levodopa, antibiotic therapy | A few days | Improved |
| [15] | 68/F | Early autumn | 9 | Levodopa 1250 Amantadine 150 Bromocriptine 5 | NA (without discontinuation of antiparkinsonian drugs) | Asitia, systemic malaise, fever, semicoma, tachypnea, tachycardia, rigidity, tremor | Intravenous fluids, oxygen inhalation, physical antipyretic measures, intravenous dantrolene sodium | More than one month | Recovered |
| [16] | 45/F | Summer | 10 | Levodopa 600 Carbidopa 60 Bromocriptine NA | Premenstrual period | Agitated, fever, diaphoresis, severe rigidity and tremor, deteriorated gait | Intravenous fluids, adding carbidopa/levodopa to her regular dose | Within 2 weeks | Recovered |

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| [17] | 66/F | Early summer | 7 | Levodopa NA Benserazide NA Trihexyphenidyl NA | Diabetic coma | Coma, fever, disorientation, autonomic dysfunction, diaphoresis, tremor, rigidity | levodopa/carbidopa and dantrolene | Several days | Recovered |
| [18] | 68/F | NA | NA | Levodopa 200 Carbidopa 50 | NA | Fever, severe rigidity, tachycardia, diaphoresis, hypernatremia | Extensive supportive care, intravenous fluids, continuation of antiparkinsonian medications | A few days | Recovered |
| [19] | 43/M | Winter | 10 | Levodopa 900 Pramipexole 2 Clozaril 50 Paroxetine 20 | Not taking medications consistently | Somnolence, fever, rigidity, generalized myoclonus | Enteral levodopa, intravenous fluids, empiric antibiotics, cyproheptadine | 9 days | Recovered |
| [20] | 70/F | NA | 23 | Levodopa 560 Carbidopa 140 Lisuride 2 Selegiline 10 | Without common triggers | Fever, altered consciousness, delirium, rigidity, autonomic dysfunction, sweating, tachycardia, increased blood pressure | Low doses of benzodiazepines, basic support measures | 2 days | Recovered |
| | 76/F | NA | 13 | Levodopa 800 Carbidopa 200 Lisuride 2.5 Amantadine 200 | Without common triggers | Fever, altered consciousness, delirium, rigidity, autonomic dysfunction, sweating, tachycardia, increased blood pressure | Low doses of benzodiazepines, basic support measures | 6 days | Recovered |
| [21] | 58/F | Early spring | 19 | Levodopa 1200 Carbidopa 300 Pramipexole 8 Amantadine 300 | Withdrawal from antiparkinsonian drugs before DBS surgery | Fever, disorientation, autonomic dysfunction with tachycardia and diaphoresis | Antiparkinsonian drugs at lower dosage, wide-spectrum antibiotic, intravenous fluids, physical antipyretic measures | 20 days | Recovered |
| [22] | 61/M | NA | NA | Levodopa 600 Benserazide 150 Tolcapone 300 | Perioperative withdrawal of antiparkinsonian medication | Sweating, hypotension, muscle rigidity, abdominal pain | Fluid resuscitation, norepinephrine infusion, levodopa/benserazide therapy | 12 days | Death (Acute heart failure) |

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| [23] | 76/F | Summer | NA | NA | Heatwave | Fever, progressive somnolence, disorientation, worsening of parkinsonism | Intravenous fluids, physical antipyretic measures | 40 hours | Death (Hyperthermic coma and respiratory failure) |
| | 66/F | Summer | NA | NA | Heatwave | Fever, progressive somnolence, disorientation, worsening of parkinsonism | Intravenous fluids, physical antipyretic measures, bromocriptine, dantrolene, antiparkinsonian drugs | A few days | Recovered |
| | 79/M | Summer | NA | NA | Heatwave | Fever, progressive somnolence, disorientation, worsening of parkinsonism | Intravenous fluids, physical antipyretic measures, bromocriptine, dantrolene, antiparkinsonian drugs | A few days | Recovered |
| [24] | 54/M | NA | 6 | Levodopa 400 Carbidopa 100 Ropinirole 12 | Abrupt cessation of fava bean intake | Worsening rigidity, fever, confusion, diaphoresis | Increased dose of Levodopa/carbidopa, oral antipyretics, intravenous hydration. | 3 days | Recovered |
| [25] | 72/M | NA | 14 | Bilateral DBS of basal ganglia Levodopa 400 Carbidopa 100 Pramipexole 0.5 Selegiline 5 | Reduction of antiparkinsonian medication after DBS implant | Fever, altered mental status, rigidity, tremors, freezing episodes, marked pill-rolling actions of the fingers, tachycardic | Reintroduction of dopamine levels, antibiotics, adequate hydration, proper nutrition, dantrolene sodium, physical antipyretic measures | 23 days | Recovered |
| [26] | 76/F | Summer | NA | Levodopa 1250 | Reduction of Levodopa | Severe rigidity, fever, labile blood pressure, rhabdomyolysis | Subcutaneous apomorphine, nasogastric levodopa, intravenous fluids, antibiotics, physical antipyretic measures | 48 hours | Recovered |
| [27] | 58/M | NA | 10 | Levodopa 600 Carbidopa 120 Selegiline 10 | NA | Delirium, fever, tremor, severe rigidity, autonomic dysfunction with tachycardia, tachypnea, and diaphoresis | Ceasing oxycodone hydrochloride, doxepin hydrochloride, selegiline and dexamethasone; Intravenous | 2 weeks | Recovered |

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| | | | | | | | fluids, antibiotics, physical antipyretic measures, ECT | | |
| [28] | 44/M | NA | 14 | Bilateral STN DBS Levodopa 3000 Benserazide 750 | Reduction of Levodopa | Agitated, incontinent of urine, fever, myoclonus, dysphagia, severe muscle rigidity and bradykinesia | Intravenous fluids, levodopa and pergolide via nasogastric tube, antibiotics | 5 days | Death (Hypotension and disseminated intravascular coagulation) |
| [29] | 60/M | NA | 3 | Levodopa 300 Carbidopa 75 Amantadine 200 | Hyponatremia | Severe rigidity and disproportionate retrocollis, fever, dehydrated, stuporous, vomiting | Intravenous fluids, physical antipyretic measures, bromocriptine, dopa | Within 2 weeks | Recovered |
| [30] | 55/M | NA | 15 | Levodopa NA Ropinirole NA Entacapone NA | Campylobacter jejuni infection | Confusion, fever, Severe rigidity, tachycardia, hypertonic, and hypertensive | Antibiotics, antivirals, suxamethonium, atracurium and propofol | 24 hours | Recovered |
| [31] | 53/M | NA | 1 | Madopar 500 | NA | Acute confusion, visual hallucinations, agitation, dehydration, fever, rigidity in all four limbs | Antibiotics, nasogastric madopar, intravenous fluids | 5 days | Death (Respiratory and renal failure) |
| [32] | 66/F | NA | 11 | Levodopa 1900 Amantadine 400 | Stop PD medication before surgery | Fever, confusion, tachycardic, hypertensive | Levodopa and dopamine agonist via nasogastric tube | 1 week | Recovered |
| [33] | 59/M | NA | 22 | NA | Stop all PD medication before surgery | Fever, unable to open eyes or respond to commands, severe tremor and rigidity of entire body | Dopamine agonist, dantrolene | NA | Recovered |
| [34] | 60/M | NA | 17 | Bilateral STN DBS Levodopa/carbidopa 300 Cabergoline 3 | Switched off the bilateral STN DBS devices | Somnolent, completely immobile with severe rigidity, fever, tachycardia | Intravenous fluids | 6 days | Recovered |
| [35] | 54/M | NA | 14 | Levodopa 600 Carbidopa 125 Entacapone 1200 | Stop PD medication before surgery | Severe tremor and rigidity, fever, hypertension | Dantrolene, levodopa, apomorphine | 32 days | Recovered |

| Pramipexole 0.54 | | | | | | | | | |
|------------------|------|-----------------|----|---|---|--|--|-------------------|--|
| [36] | 74/M | Early Autumn | 15 | Bromocriptine 5 | Abrupt discontinuation of bromocriptine | Confusion, fever, diaphoresis, severe rigidity, tachycardia, hypertensive | Intravenous fluids, bicarbonate Infusion, reinstitution of bromocriptine, physical antipyretic measures, acetaminophen, thiamine | 11 days | Recovered |
| [37] | 69/M | NA | 9 | Levodopa 300 Carbidopa 30 Pramipexol 1.5 | Fecal impaction and diarrhea | Fever, worsening of rigidity and akinesia, totally bed-ridden | Intravenous fluids, levodopa, digital evacuation of the rectum, oral dai-kenchu-tou (an herbal medicine) | Within 4 weeks | Recovered |
| [38] | 67/M | NA | 8 | Ropinirole 4 Carbidopa 500 Levodopa 120 Selegiline 10 | Reduction of ropinirole | Confused, hallucinating, fever, tremor, rigidity, bradykinesia, tachycardia, sweating | Physical antipyretic measures, co-careldopa, ropinirole | A few days | Recovered |
| [39] | 74/F | NA | NA | Bilateral STN DBS Levodopa 900 Carbidopa 225 | Stoppage of the bilateral STN DBS devices | Fever, tachypnea, tachycardia, hypertension, diaphoresis, disorientation, rigidity, tremors, dystonia | Aggressive hydration and cooling, intravenous dantrolene | Over 24 hours | Recovered |
| [40] | 77/M | NA | 18 | Bilateral STN DBS Levodopa 1000 | Battery of DBS IPG depletion | Fever, tremor, rigidity | Intravenous fluids, amantadine, acetaminophen, IPG exchange | 11 days | Death (Disseminated intravascular coagulation) |
| [41] | 75/F | NA | 14 | Amantadine 100 Levodopa 150 Carbidopa 15 Zonisamide 50 Levodopa 200 Benserazide 50 Pergolide mesylate 0.75 Trihexyphenidyl 3 | NA | Severe tremor, diaphoresis, fever, dysphagia, hypertension | Intravenous fluid, oral levodopa/benserazide | 10 days | Death (Myocardial infarction) |

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|------|------|----|----|--|--|--|--|---------|--|
| [42] | 68/F | NA | 4 | Levodopa 600 Entacapone 300 Amantadine 300 | Reduction of levodopa | Fever, severe muscular rigidity, tachycardia, hypertension, acute respiratory failure, disturbance of consciousness | Increased levodopa, endotracheal intubation | 10 days | Death (Acute respiratory failure) |
| [43] | 63/M | NA | 18 | Bilateral STN DBS Levodopa 900 | Battery of DBS IPG depletion | Akinetic state, dyspnea, tachycardia, hypertension, fever | intravenous hydration, clonazepam, paracetamol, increased levodopa, IPG replacement | 4 days | Recovered |
| [44] | 49/M | NA | 13 | Levodopa 1500 Carbidopa 375 Entacapone 800 Ropinirole 6 Amantadine 300 | Drugs withdrawal before DBS procedure | Severe rigidity, tremors, fever, tachycardia, drowsiness, myoglobulinuria | Intravenous fluids, empirical antibiotics, increased levodopa | 16 days | Death (Acute renal failure, pneumonia and septicemic shock) |
| [45] | 72/F | NA | NA | Levodopa NA Amantadine NA | Constipation | Fever, tachycardia, hypertension, diaphoresis, abdominal bloating, rhabdomyolysis | Ceftriaxone, NSAIDs, corticosteroids, normal antiparkinsonian medication, intravenous fluids, intravenous dantrolene | 9 days | Death (Renal failure and irreversible cardiac arrest) |
| [46] | 70/F | NA | 9 | Levodopa 300 Carbidopa 75 Memantine 20 | Recurrent diarrhea with poor oral intake | Fever, altered consciousness, aggravated tremor and rigidity, seizure-like movements, tachycardia | Intubation and mechanical ventilation support, intravenous dantrolene sodium, physical antipyretic measures, antibiotic, antiparkinsonian drugs | 22 days | Recovered |
| [47] | 69/M | NA | 14 | Levodopa 800 Amantadine 200 | Battery of DBS IPG depletion | Confused, fever, severe diffuse resting tremor, tachycardia, hypertension | Intravenous fluids, physical antipyretic measures, acetaminophen, antibiotics, carbidopa-levodopa, lorazepam, bromocriptine, | 3 days | Recovered |

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| | | | | | | | dantrolene, lorazepam | | |
| [48] | 48/M | NA | 19 | Bilateral STN DBS Levodopa 200 | Battery of DBS IPG depletion | Agitated, paranoid, fever, severe resting tremor, rigidity, and dyskinesias of the upper part of his body, immobile, tachycardic, incontinent of urine | Battery replacement, reinstitution of levodopa and piribedil | Within 1 month | Recovered |
| [49] | 61/M | NA | 14 | Levodopa 600 Benserazide 150 Trihexyphenidyl 6 Amantadine 300 | Withdrawal of antiparkinsonian medication before DBS procedure | Fever, confusion, generalized tremor, extreme axial rigidity, tachycardia, blood pressure fluctuations, diaphoresis | Intravenous fluids, empiric antibiotic, increased bromocriptine, activated DBS system | 10 days | Recovered |
| [50] | 62/M | Summer | 10 | Levodopa NA Carbidopa NA Amantadine NA Entacapone NA Rasagiline NA Pramipexole NA | Purportedly drank very little fluids and non-compliance to therapy | Altered mental status, generalized tonic-clonic seizure, fever, severe muscle rigidity, respiratory failure, tachycardia, hypertension | Reinstitution of anti- parkinsonian medications, continuing ventilatory support, physical antipyretic measures, intravenous fluids, bromocriptine | 12 days | Recovered |
| [51] | 60/M | NA | 13 | Levodopa 300 Carbidopa 75 | Stopped the antiparkinsonian medications | Drowsy, confused, fever, altered sensorium, respiratory difficulty, cogwheel rigidity, diaphoresis | Restarted on antiparkinsonian medications, supportive measures | 5 days | Recovered |
| [52] | 67/F | Spring | 23 | Bilateral STN DBS Levodopa NA Carbidopa NA Pramipexole NA | Battery of DBS IPG depletion | Fever, altered mental status, poor oral intake, low urinary output, severe muscular rigidity, severely dehydrated, mild respiratory distress, tachycardia, hypertension, diaphoresis | Antibiotics, intravenous fluids, physical antipyretic measures, increased levodopa, IPG replacement | 21 days | Recovered |
| [53] | 71/M | Winter | 8 | Levodopa 400 Benserazide 100 Pramipexole 1.5 | Influenza A virus infection | Fever, altered mental status, severe akinesia and rigidity | Intravenous peramivir, increased antiparkinsonian drugs | 19 days | Recovered |
| [54] | 75/F | NA | 11 | Levodopa 300 | Withdrawal of | Altered mental status, fever, | Regular levodopa | 5 days | Recovered |

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|---------------|------|--------|----|--|---|--|--|---------|------------------------|
| | | | | Benserazide 75 Ropinirole 1 Amantadine 200 | antiparkinsonian medication | severe tremor and rigidity, diaphoresis, hyponatremia | supplementation via L-tube, Broad spectrum antibiotics, intravenous fluids | | |
| [55] | 64/F | NA | 15 | Levodopa 500 Donepezil NA Quetiapine NA Valproic acid NA | NA | Fever, marked muscle rigidity, autonomic system disorders, salivation, delirium-like change in consciousness | Modified ECT | 5 weeks | Recovered gradually |
| [56] | 79/F | NA | 19 | Pramipexole 0.75 Biperiden 2 Amantadine 300 Risperidone 4 | Abrupt discontinuation of amantadine | Severe global muscular cogwheel rigidity, global unresponsiveness to stimuli, diaphoresis, persistent tachycardia, recurrent hyperpyrexia | Reintroduction of amantadine and levodopa/carbidopa | 14 days | Recovered |
| This study | 57/F | Summer | 6 | Pramipexole 0.75 Madopar 625 | Withdrawal of antiparkinsonian medication | Confusional state, fever, diaphoresis, severe tremor and rigidity, hyponatremia, dysphagia, tachycardia | Reintroduction of madopar, sedated with benzodiazepines, intravenous fluids and sodium supplementation, antibiotics | 23 days | Recovered |

^a Listed in parentheses are causes of death.

DBS, deep brain stimulation; ECT, Electroconvulsive therapy; F, female; IPG, impulse generator; M, male; NA, not available; NSAIDs, nonsteroidal anti-inflammatory drugs; PD, Parkinson's disease; PHS, parkinsonism hyperpyrexia syndrome; STN, subthalamic nucleus.

Supplementary Table 2. Overview of PD patients with DHS

| Report | Age/ sex | Season | PD duration (y) | Medication (mg/day) | Suspected trigger | Symptoms | Treatment | Symptom duration | Outcome |
|--------|-------------|---------------------------------|-----------------------|--|--|---|--|---------------------|--|
| [4] | 68/F | NA | 12 | Levodopa 750 Pramipexole 4 Amantadine 200 | NA | Dyskinesias, fever, confusional state, drowsiness, hallucinations | Intravenous fluids, paracetamol, physical antipyretic measures, tapering pramipexol, adding quetiapine | A few days | Recovered |
| [57] | 70/F | Early autumn | 13 | Levodopa 600 Pramipexole 3 Selegiline 5 | Immediate release pramipexole changing to extended release pramipexole | Dyskinesias, fever, hyperhidrosis, disorientation, hallucinations | Tapering oral dopaminergic drugs | 7 days | Recovered |
| [5] | 74/F | Three consecutive summers | 16 | LEDD 1390 | Hot weather | Dyskinesias, fever | Decreasing dopaminergic medication before summers, using amantadine, quetiapine | A few days | Recovered |
| [59] | 66/F | Summer | 16 | LCIG 1450 Safinamide 100 Amantadine 200 Ropinirole 8 | Initiation of ropinirole, trauma | Dyskinesias, fever, confusional state, hallucinations | Discontinuation of levodopa enteral infusion, administration of benzodiazepines, intravenous fluids, antipyretic drugs | 4 days | Recovered |
| [58] | 74/F | Spring | 23 | Levodopa 375 Amantadine 200 Pramipexole ER 1.075 | Trauma | Dyskinesias, fever, hallucinations, disorientation | Stopping amantadine and pramipexole, intravenous midazolam infusion | 4 days | Recovered |
| [60] | 80/M | Summer | 20 | LCIG 1500 Pramipexole 1.05 Amantadine 200 Sertraline 50 | Heatwave, cholecystitis | Dyskinesias, fever, confusional state, lethargy | Intravenous fluids, antipyretics, antibiotic, tapering LCIG and pramipexole | 5 days | Death (Pneumonia and renal failure) |
| | 76/F | Summer | 18 | LCIG 1200 Pramipexole 1.05 | Heatwave, infection | Dyskinesias, fever, hallucinations, respiratory | Died before medication change | 3 days | Death (Acute pulmonary) |

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|---------------|------|-----------------|----|---|--|---|--|------------|-----------|
| | | | | Venlafaxine 75 Zolpidem 10 | | distress, tachycardia | | | edema) |
| | 79/F | Summer | 30 | LCIG 1250 | Heatwave, infection | Dyskinesias, fever, dehydration, pharyngodynia, hyporexia | LCIG reduction, rehydration, antibiotic | 10 days | Recovered |
| [61] | 62/M | Summer | 34 | STN-DBS Levodopa 2000 Entacapone 1600 | Heatwave | Dyskinesias, fever, confusional state, disorientation, dehydration, tachycardia | Lowering the stimulation amplitude, suspending oral medications, acetaminophen, intravenous rehydration, antibiotic | 2 days | Recovered |
| [62] | 76/F | NA | 16 | Levodopa 600 Carbidopa 150 Entacapone 300 Pramipexole 0.75 Rasagiline 1 | Drug abuse | Dyskinesias, fever, confusional state | Reducing the dose of antiparkinsonian drugs | A few days | Recovered |
| [63] | 64/M | NA | 10 | LB 650 Entacapone 500 Piribedil 150 Benzhexol 2 | Unpredictable gastrointestinal dysmotility | Dyskinesias, sweating, fever | Intravenous fluid and diazepam, stopping all anti-parkinsonian medications | 3 days | Recovered |
| | 64/F | NA | 10 | LB 875 Entacapone 800 Ropinirole 4 | Increasing the dosage of ropinirole | Dyskinesias, fever, myalgia, mildly confusion | Intravenous fluid, empirical antibiotics, stopping all anti- parkinsonian medications and oral clonazepam | 4 days | Recovered |
| This study | 74/F | early autumn | 4 | Piribedil 150 Selegiline 10 | Levodopa abuse | Dyskinesias, fever, hallucinations, tachycardia, hyperhidrosis, rhabdomyolysis | Suspending oral medications, intravenous rehydration, intravenous midazolam | 5 days | Recovered |

^a Listed in parentheses are causes of death.

DHS, dyskinesia hyperpyrexia syndrome; F, female; LB, levodopa/benserazide; LCIG, levodopa-carbidopa intestinal gel; LEDD, L-dopa equivalent daily dosage; M, male; NA, not available; PD, Parkinson's disease.