Dentatorubral-pallidoluysian atrophy

- Total corpus callosotomy for an adult patient with progressive myoclonic epilepsy associated with dentatorubral-pallidoluysian atrophy: illustrative case
- Intrathecal baclofen therapy can improve spasticity associated with infantile-onset dentatorubral-pallidoluysian atrophy: illustrative cases
- Clinical and Genetic Findings in a Chinese Cohort of Dentatorubral-Pallidoluysian Atrophy Patients
- Identification of Plasma Growth Factors and Cytokines as Diagnostic Biomarkers for the Lafora Form of Progressive Myoclonus Epilepsy
- Accurate Quantification of Mutant and Wild-Type polyQ Proteins Using Simple Western Capillary Immunoassays
- Case report of Lafora disease: a rare genetic disorder manifesting as progressive myoclonic epilepsy
- Progressive Myoclonus Epilepsy: Diversity of Disorders and Key Points in Clinical Practice
- Approach to Progressive Myoclonic Epilepsies: Clinical Clues for Genetic Testing

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Dentatorubral-pallidoluysian atrophy (DRPLA) is a rare, autosomal dominant neurodegenerative disorder caused by CAG trinucleotide repeat expansion in the ATN1 gene on chromosome 12p13.31. It is part of the polyglutamine (polyQ) disease family, which also includes Huntington's disease and several spinocerebellar ataxias.

Key Clinical Features

Myoclonus

Epilepsy

Ataxia

Choreoathetosis

Cognitive decline

Psychiatric symptoms

Progressive motor and speech deterioration

Age-dependent Phenotype: Childhood onset: More likely to present with progressive myoclonic epilepsy (PME), seizures, and cognitive regression.

Adult onset: Often presents with ataxia, chorea, dementia, and psychiatric symptoms.

Neuroimaging

Cerebellar and brainstem atrophy

Cerebral white matter changes

Thalamic and basal ganglia involvement in advanced disease

Prognosis

Progressive and ultimately fatal, with variability in disease duration. The age of onset and severity correlate with the number of CAG repeats.

Management

Symptomatic: Antiepileptics for seizures, physical therapy, speech support

No disease-modifying therapy exists

Palliative surgery (e.g., corpus callosotomy) may be considered for drug-resistant epilepsy

DRPLA is particularly prevalent in Japan and has a well-characterized genetic basis, making it a key model for studying polyQ neurodegeneration.

Case Reports

In a single-patient illustrative case, **Mine et al.**, from Kyushu University, Fukuoka, Japan, published in the Journal of Neurosurgery Case Lessons, report the **first adult case** of Dentatorubral-pallidoluysian atrophy (DRPLA)-associated progressive myoclonic epilepsy (PME) treated with a **total corpus callosotomy (CC)** for refractory seizures.

→ **Outcome**: Total CC led to a **marked reduction in seizure frequency**. Tonic seizures and FBTCSs with desaturation resolved by 1 year, with notable **improvement in quality of life (QOL)**.

[1)]

Critical Appraisal

- **Strengths**
  - Novelty: First reported adult DRPLA-PME corpus callosotomy.
  - Clearly disabling epilepsy: Myoclonus, tonic seizures, desaturation.

    - Clear outcome: Sustained seizure reduction at 1-year.

- **Limitations**
    - Single case → low external validity.
    - No comparator: No data vs. anterior CC or other therapies.
    - Cognitive effects unquantified.
    - DRPLA is a diffuse neurodegenerative disease; CC does not target focus directly.

- **Intellectual Rigour**
    - Palliative intent is explicitly acknowledged.
    - Cites prior PME cases (mostly pediatric, non-DRPLA).
    - Lacks deeper comparison to alternatives (e.g. VNS, thalamic DBS).

Clinical Verdict

★★★☆☆ **6/10** Interesting and rare case with clear illustrative value. However, it lacks broader context, comparative analysis, and rigorous outcome measurement.

Takeaway for Practicing Neurosurgeons

Clinical context: In **adult patients** with Dentatorubral-pallidoluysian atrophy (DRPLA)-related **progressive myoclonic epilepsy (PME)** that is **disabling** and **refractory to standard therapies**, → a **total corpus callosotomy** may offer **clinically meaningful palliation**.

Key benefits observed:

- **Rapid reduction** in seizure frequency
- **Resolution of desaturation** episodes
- **Improved quality of life (QOL)** at 1-year follow-up

Safety:

- No major additional neurological or systemic harm reported postoperatively

Bottom line: > This case supports **considering total callosotomy** as a **palliative surgical option** in select adult PME cases where conventional therapies have failed.

Bottom Line

Total corpus callosotomy may be a **reasonable and effective palliative option** in **adult-onset DRPLA-related PME**, particularly when conventional treatments have failed.

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Mine D, Shimogawa T, Sakai Y, Shigeto H, Okubo S, Sakata A, Watanabe E, Nakamizo A, Yoshimoto K. Total corpus callosotomy for an adult patient with progressive myoclonic epilepsy associated with

dentatorubral-pallidoluysian atrophy: illustrative case. J Neurosurg Case Lessons. 2025 Jul 7;10(1):CASE2576. doi:10.3171/CASE2576. PMID: 40623331.