

Paraplegia & Cell Structure

Cause & Effect

Causes of Paraplegia:

Genetics

Other ways someone could
become paraplegic...

- Injury
- Specific infectious diseases
- Alcoholism
- Cancer

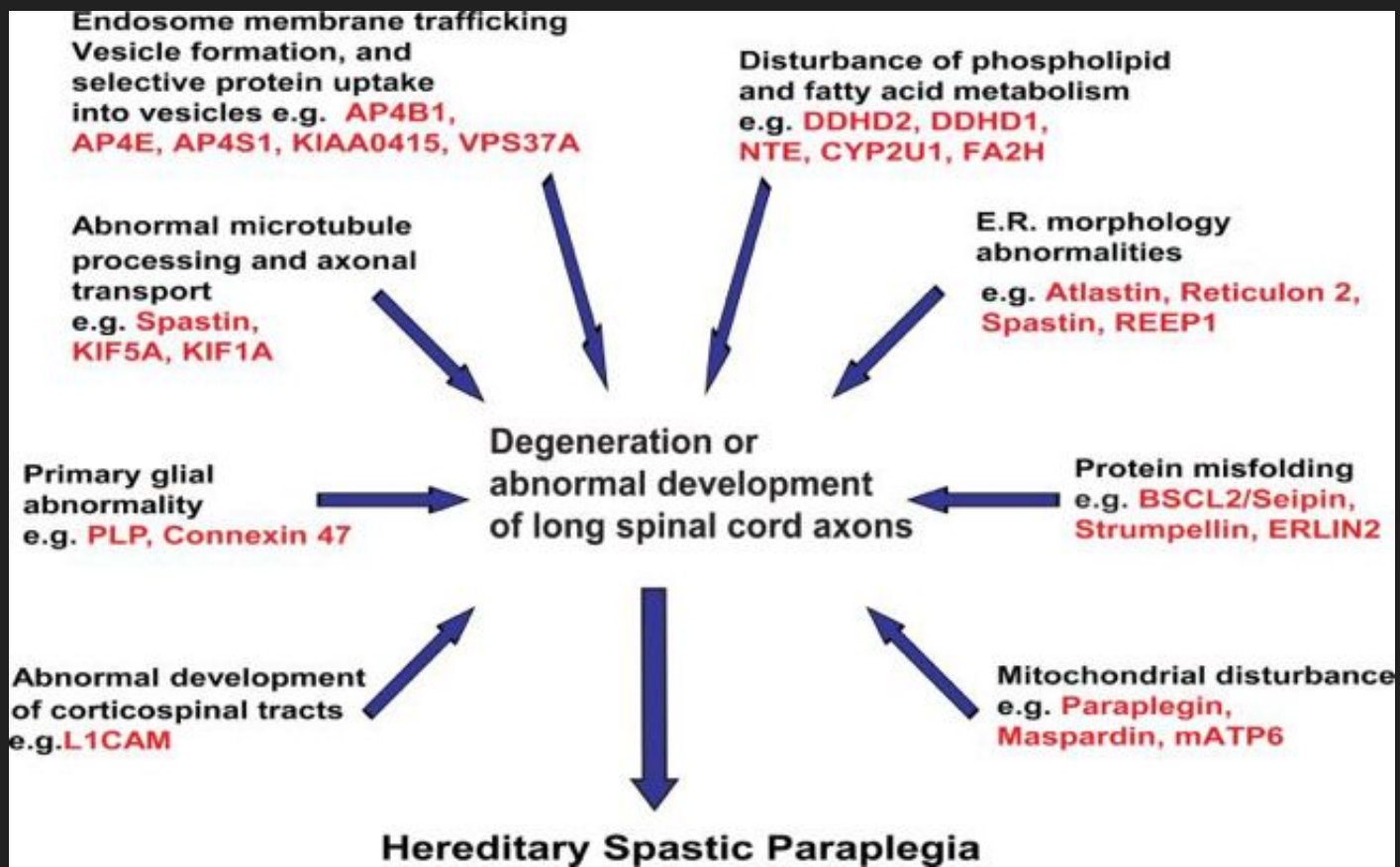


Figure 1: Depicts different substances which are sometimes affected in different HSP cases. (Kara et al.)

Effect

Estimates range from 1 in
11,000 people to 1 in
77,000 people.

Recessive autosomal
paraplegia: 25-30%

Dominant autosomal:
70-75%

Uncomplicated

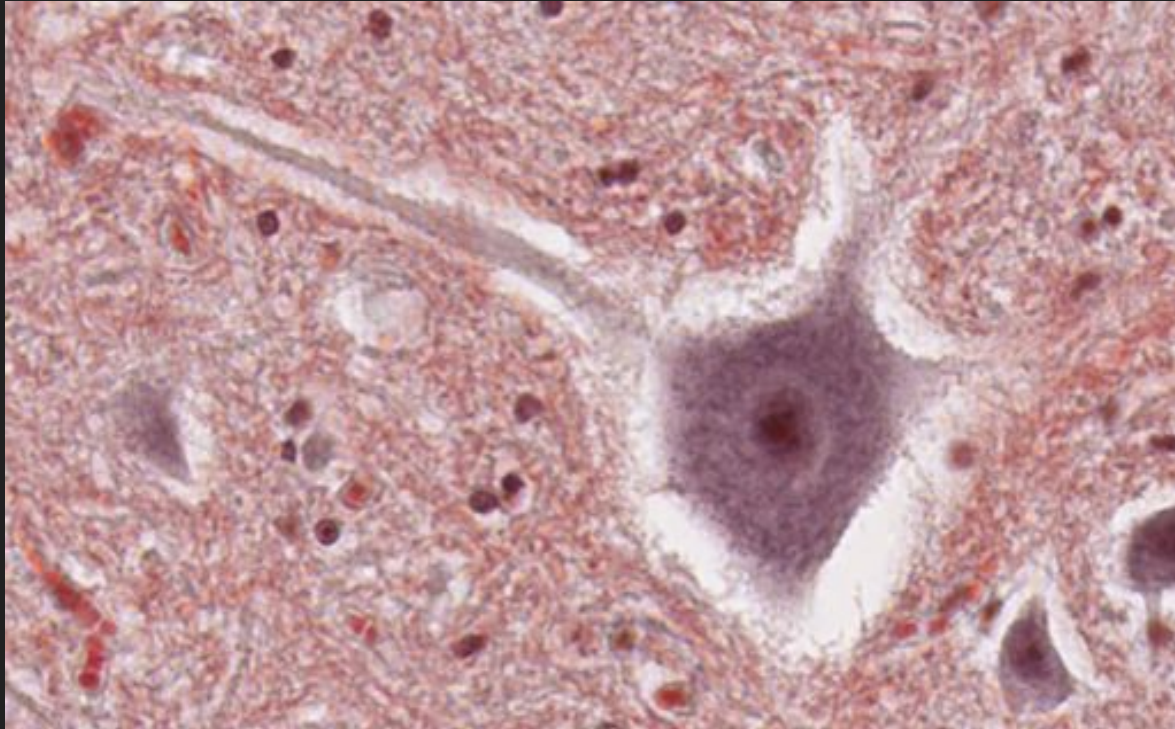
- Bilateral dysfunction of lower limbs
- **Enuresis**
- Abnormal sensory reactions from stimuli to feet/
vibrations
- Gait differences
- muscle atrophy leading to weakness
- Spasms

Complicated

In addition to the previous...

- Ataxia
- Deafness
- Seizures
- Muscle atrophy
- Extrapyrmidal disturbance
- Dementia
- Occasional mental disability

Normal Cell

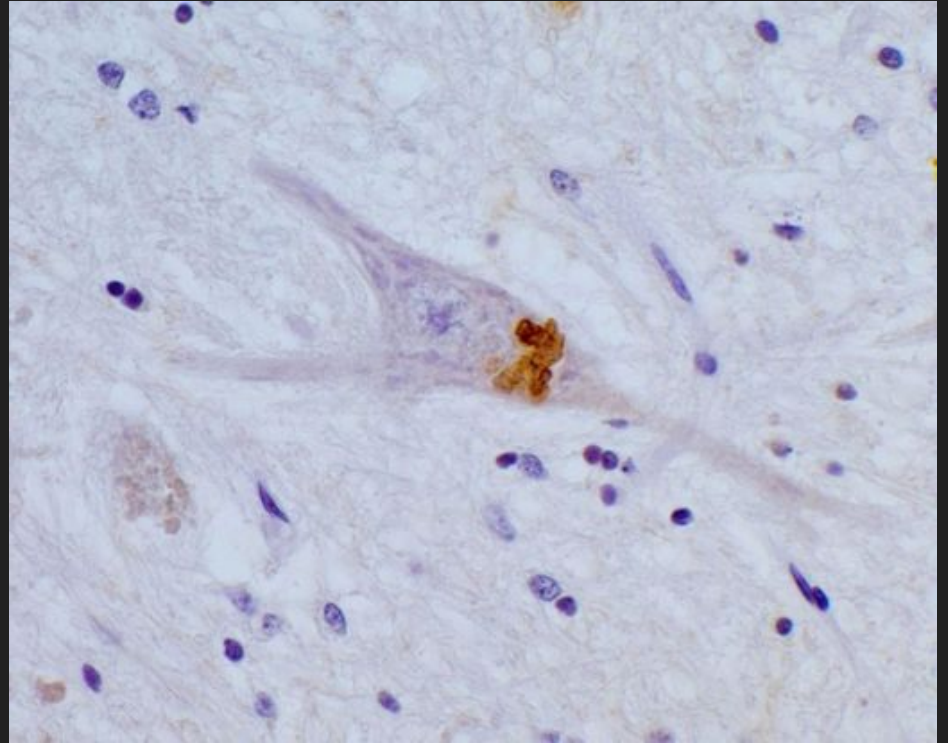


A healthy neuron

Abnormal Cell

Affected cell body can be seen in the center with lipid accumulation.

(Denora et al.)



Treatment

Lioresal, Dantrolene or Tizanidine, elective injection of botulinum toxin (Botox): Spasticity

Oxybutynin: Urinary Urgency

Physical therapy: range of motion, maintain and increase lower extremity strength, and increase cardiovascular conditioning

Resources

- Denora, P. S., Smets, K., Zolfanelli, F., Ceuterick-de Groote, C., Casali, C., Deconinck, T., . . . El Hachimi, K. H. (2016, June). Motor neuron degeneration in spastic paraplegia 11 mimics amyotrophic lateral sclerosis lesions. Retrieved April 7, 2021, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5839621/figure/fig1g/>
- Fink J. K. (2013). Hereditary spastic paraplegia: clinicopathologic features and emerging molecular mechanisms. *Acta neuropathologica*, 126(3), 307–328. <https://doi.org/10.1007/s00401-013-1115-8>
- Hedera, P. (2021, February 11). Hereditary Spastic Paraplegia Overview. Retrieved April 7 2021, from <https://www.ncbi.nlm.nih.gov/books/NBK1509/>
- Kara, E., Tucci, A., Manzoni, C., Lynch, D. S., Elpidorou, M., Bettencourt, C., . . . Houlden, H. (2016, May 23). Genetic and phenotypic characterization of complex hereditary spastic paraplegia. Retrieved April 7, 2021, from <https://doi.org/10.1093/brain/aww111>
- Virtual Slide List. (n.d.). Retrieved April 7, 2021, from <https://histology.medicine.umich.edu/full-slide-list>