Familial paroxysmal kinesigenic dyskinesia

Description

Familial paroxysmal kinesigenic dyskinesia is a disorder characterized by episodes of abnormal movement that range from mild to severe. In the condition name, the word paroxysmal indicates that the abnormal movements come and go over time, kinesigenic means that episodes are triggered by movement, and dyskinesia refers to involuntary movement of the body.

People with familial paroxysmal kinesigenic dyskinesia experience episodes of irregular jerking or shaking movements that are brought on by sudden motion, such as standing up quickly or being startled. An episode may involve slow, prolonged muscle contractions (dystonia); small, fast, "dance-like" motions (chorea); writhing movements of the limbs (athetosis); or, rarely, flailing movements of the limbs (ballismus).

Familial paroxysmal kinesigenic dyskinesia may affect one or both sides of the body. The type of abnormal movement varies among affected individuals, even among members of the same family. In many people with familial paroxysmal kinesigenic dyskinesia, a pattern of symptoms called an aura immediately precedes the episode. The aura is often described as a crawling or tingling sensation in the affected body part. Individuals with this condition do not lose consciousness during an episode and do not experience any symptoms between episodes.

Individuals with familial paroxysmal kinesigenic dyskinesia usually first experience episodes during childhood or adolescence. Episodes typically last less than five minutes, and the frequency of episodes ranges from one per month to 100 per day. In most affected individuals, episodes occur less often with age.

In some people with familial paroxysmal kinesigenic dyskinesia the disorder begins in infancy with recurring seizures characteristic of those in a condition called benign familial infantile seizures. These seizures usually develop in the first year of life and stop by age 3. When benign familial infantile seizures are associated with familial paroxysmal kinesigenic dyskinesia, the condition is known as infantile convulsions and choreoathetosis (ICCA). In families with ICCA, some individuals develop only benign familial infantile seizures, some have only familial paroxysmal kinesigenic dyskinesia, and others have ICCA, which has features of both conditions.

Frequency

Familial paroxysmal kinesigenic dyskinesia is estimated to occur in 1 in 150,000 individuals. For unknown reasons, this condition affects more males than females.

Causes

Familial paroxysmal kinesigenic dyskinesia can be caused by variants (also known as mutations) in the *PRRT2* gene. The protein produced from this gene helps control signaling between nerve cells (neurons) in the brain. *PRRT2* gene variants, which reduce the amount of PRRT2 protein, lead to abnormal neuronal signaling. This altered activity in the brain is thought to underlie the movement problems associated with familial paroxysmal kinesigenic dyskinesia.

Not everyone with this condition has a variant in the *PRRT2* gene. Variants in other genes involved in signaling in the brain are rare causes of familial paroxysmal kinesigenic dyskinesia. The genetic cause is unknown in other affected families. Noninherited (somatic) variants in the same and other genes can cause paroxysmal kinesigenic dyskinesia in people with no family history of the disorder. The nonfamilial form is referred to as sporadic paroxysmal kinesigenic dyskinesia.

Learn more about the genes associated with Familial paroxysmal kinesigenic dyskinesia

- CHRNA4
- DEPDC5
- KCNA1
- PNKD
- PRRT2
- SLC2A1

Inheritance

This condition is inherited in an autosomal dominant pattern. Autosomal dominant inheritance means that one copy of an altered gene in each cell is sufficient to cause the disorder. In most cases, an affected person has one parent with the condition.

Other Names for This Condition

- Dystonia 10
- Episodic kinesigenic dyskinesia
- Familial paroxysmal dystonia
- Paroxysmal kinesigenic choreoathetosis

- Paroxysmal kinesigenic dyskinesia

Additional Information & Resources

Genetic Testing Information

- Genetic Testing Registry: Episodic kinesigenic dyskinesia 1 (https://www.ncbi.nlm.nih.gov/gtr/conditions/C4552000/)

Genetic and Rare Diseases Information Center

- Paroxysmal kinesigenic dyskinesia (https://rarediseases.info.nih.gov/diseases/8721/index)

Patient Support and Advocacy Resources

- National Organization for Rare Disorders (NORD) (https://rarediseases.org/)

Clinical Trials

- ClinicalTrials.gov (https://clinicaltrials.gov/search?cond=%22Familial paroxysmal kinesigenic dyskinesia%22)

Catalog of Genes and Diseases from OMIM

- EPISODIC KINESIGENIC DYSKINESIA 1; EKD1 (https://omim.org/entry/128200)

Scientific Articles on PubMed

- PubMed (https://pubmed.ncbi.nlm.nih.gov/?term=%28%28familial+paroxysmal+kinesigenic+dyskinesia%5BTIAB%5D%29+OR+%28familial+paroxysmal+dystonia%5BTIAB%5D%29+OR+%28paroxysmal+kinesigenic+choreoathetosis%5BTIAB%5D%29+OR+%28paroxysmal+kinesigenic+dyskinesia%5BTIAB%5D%29%29+AND+english%5Bla%5D+AND+human%5Bmh%5D+AND+%22last+1800+days%22%5Bdp%5D)

References

- Chen WJ, Lin Y, Xiong ZQ, Wei W, Ni W, Tan GH, Guo SL, He J, Chen YF, ZhangQJ, Li HF, Lin Y, Murong SX, Xu J, Wang N, Wu ZY. Exome sequencing identifiestruncating mutations in PRRT2 that cause paroxysmal kinesigenic dyskinesia. NatGenet. 2011 Nov 20;43(12):1252-5. doi: 10.1038/ng.1008. Citation

on PubMed (https://pubmed.ncbi.nlm.nih.gov/22101681)

- Gardiner AR, Jaffer F, Dale RC, Labrum R, Erro R, Meyer E, Xiromerisiou G, Stamelou M, Walker M, Kullmann D, Warner T, Jarman P, Hanna M, Kurian MA, BhatiaKP, Houlden H. The clinical and genetic heterogeneity of paroxysmal dyskinesias.Brain. 2015 Dec;138(Pt 12):3567-80. doi: 10.1093/brain/awv310. Epub 2015 Nov 23. Citation on PubMed (https://pubmed.ncbi.nlm.nih.gov/26598494) or Free article on PubMed Central (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4655345/)
- Kato N, Sadamatsu M, Kikuchi T, Niikawa N, Fukuyama Y. Paroxysmal kinesigenicchoreoathetosis: from first discovery in 1892 to genetic linkage with benignfamilial infantile convulsions. Epilepsy Res. 2006 Aug;70 Suppl 1:S174-84. doi:10.1016/j.eplepsyres.2006.02.009. Epub 2006 Aug 9. Citation on PubMed (https://pubmed.ncbi.nlm.nih.gov/16901678)
- Landolfi A, Barone P, Erro R. The Spectrum of PRRT2-AssociatedDisorders: Update on Clinical Features and Pathophysiology. Front Neurol. 2021Mar 4;12:629747. doi: 10.3389/fneur.2021.629747. eCollection 2021. Citation on PubMed (https://www.ncbi.nlm.nih.gov/pubmed/33746883)
- Mehta SH, Morgan JC, Sethi KD. Paroxysmal dyskinesias. Curr Treat OptionsNeurol. 2009 May;11(3):170-8. doi: 10.1007/s11940-009-0020-x. Citation on PubMed (https://pubmed.ncbi.nlm.nih.gov/19364451)
- Rochette J, Roll P, Szepetowski P. Genetics of infantile seizures withparoxysmal dyskinesia: the infantile convulsions and choreoathetosis (ICCA) andICCA-related syndromes. J Med Genet. 2008 Dec;45(12):773-9. doi:10.1136/jmg.2008.059519. Citation on PubMed (https://pubmed.ncbi.nlm.nih.gov/19047496)
- Silveira-Moriyama L, Gardiner AR, Meyer E, King MD, Smith M, Rakshi K, ParkerA, Mallick AA, Brown R, Vassallo G, Jardine PE, Guerreiro MM, Lees AJ, Houlden H, Kurian MA. Clinical features of childhood-onset paroxysmal kinesigenic dyskinesiawith PRRT2 gene mutations. Dev Med Child Neurol. 2013 Apr;55(4):327-34. doi:10.1111/dmcn.12056. Epub 2013 Jan 30. Citation on PubMed (https://pubmed.ncbi.nlm.nih.gov/23363396)
- Tian WT, Huang XJ, Mao X, Liu Q, Liu XL, Zeng S, Guo XN, Shen JY, Xu YQ, TangHD, Yin XM, Zhang M, Tang WG, Liu XR, Tang BS, Chen SD, Cao L. Proline-richtransmembrane protein 2-negative paroxysmal kinesigenic dyskinesia: Clinical andgenetic analyses of 163 patients. Mov Disord. 2018 Mar;33(3):459-467. doi:10.1002/mds.27274. Epub 2018 Jan 22. Citation on PubMed (https://www.ncbi.nlm.nih.gov/pubmed/29356177)
- van Rootselaar AF, Schade van Westrum S, Velis DN, Tijssen MA. The paroxysmaldyskinesias. Pract Neurol. 2009 Apr;9(2):102-9. doi: 10.1136/jnnp.2009.172213. Citation on PubMed (https://pubmed.ncbi.nlm.nih.gov/19289562)
- Yin XM, Lin JH, Cao L, Zhang TM, Zeng S, Zhang KL, Tian WT, Hu ZM, Li N, WangJL, Guo JF, Wang RX, Xia K, Zhang ZH, Yin F, Peng J, Liao WP, Yi YH, Liu JY, YangZX, Chen Z, Mao X, Yan XX, Jiang H, Shen L, Chen SD, Zhang LM, Tang BS. Familialparoxysmal kinesigenic dyskinesia is associated with mutations in the KCNA1 gene.Hum Mol Genet. 2018 Feb 15;27(4):625-637. doi: 10.1093/hmg/ddx430. Erratum In:Hum Mol Genet. 2018 Feb 15;27(4):757-758. Citation on

PubMed (https://www.ncbi.nlm.nih.gov/pubmed/29294000)

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