KIF1A

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KIF1A-associated neurological diseases (KANDs) are a group of inherited conditions caused by changes in the microtubule (MT) motor protein KIF1A as a result of

KIF1A

gene mutations. Anterograde transport of membrane organelles is facilitated by the kinesin family protein encoded by the MT-based motor gene

KIF1A

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KIF1A

gene, which primarily affect the motor domain, disrupt its ability to transport synaptic vesicles containing synaptophysin and synaptotagmin leading to various neurological pathologies such as hereditary sensory neuropathy, autosomal dominant and recessive forms of spastic paraplegia, and different neurological conditions. These mutations are frequently misdiagnosed because they result from spontaneous, non-inherited genomic alterations. Whole-exome sequencing (WES), a cutting-edge method, assists neurologists in diagnosing the illness and in planning and choosing the best course of action. These conditions are simple to be identified in pediatric and have a life expectancy of 5-7 years. There is presently no permanent treatment for these illnesses, and researchers have not yet discovered a medicine to treat them. Scientists have more hope in gene therapy since it can be used to cure diseases brought on by mutations. In this review article, we discussed some of the experimental gene therapy methods, including gene replacement, gene knockdown, symptomatic gene therapy, and cell suicide gene therapy. It also covered its clinical symptoms, pathogenesis, current diagnostics, therapy, and research advances currently occurring in the field of KAND-related disorders. This review also explained the impact that gene therapy can be designed in this direction and afford the remarkable benefits to the patients and society.