GENETIC ATAXIAS: TEN YEARS EXPERIENCE

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INTRODUCTION

Genetic ataxias are rare neurodegenerative diseases. Clinically dominated by cerebellar motor syndrome and usually lead to significant disability. The study of ataxia is a challenge due to clinical heterogeneity.

OBJECTIVE

To report a series of 24 patients with a diagnosis of genetic ataxia evaluated in the Neuropediatrics Service.

METHOD

Retrospective, observational and descriptive study through the review of medical records from 2014 to 2023.

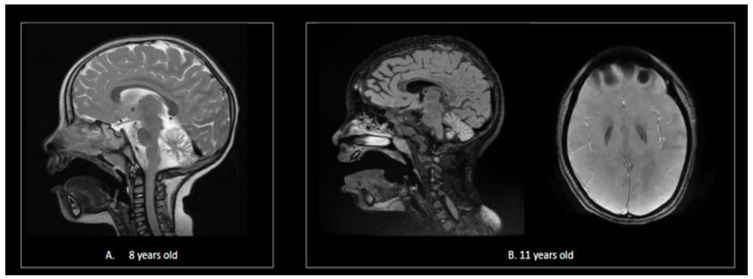
RELATED SYMPTOMS

Cognitive, Language and academic difficulties	13	52%
Hypotonia	12	48%
Neurodevelopmental delay	11	44%
Abnormal movements	10	40%
Epilepsy	5	20%
Peripheral neuropathy	5	20%
Pyramidal symptoms	7	28%
Peculiar phenotype	4	16%

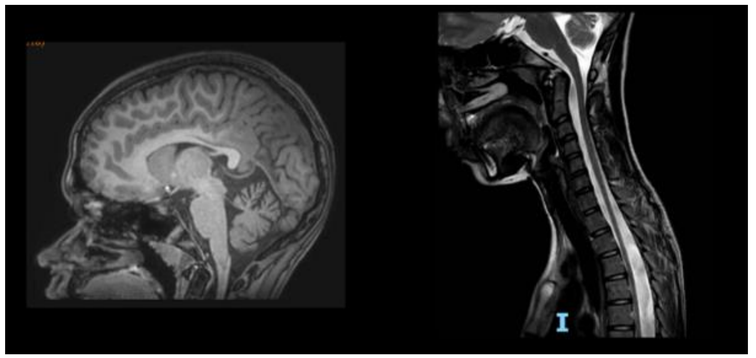
Diagnosis	Diagnostic Method	Guiding Factor
ARSACS	ATAXIA PANEL	Spinal Refinement
ARSACS	ATAXIA PANEL	Piramidalysm
SCA 19: KCND3	ATAXIA PANEL	Piramidalysm
SCA 48: STUB 1	ATAXIA PANEL	Piramidalysm
SCA 11: TTBK2	ATAXIA PANEL	Piramidalysm
SCA 29: ITPR1	ATAXIA PANEL	Piramidalysm
APTX 1	ATAXIA PANEL	Oculomotor apraxia
ATM	ATAXIA PANEL	Hemosiderin depot
COQ8A	ATAXIA PANEL	Coenzyme Q deficiency
COQ8A	ATAXIA PANEL	Coenzyme Q deficiency
CACNA1A	ATAXIA PANEL	Piramidalysm
D. 2p15p13.3 (28 gens)	ARRAY	Dysmorphia
TUBB4A	ATAXIA PANEL	Supratentorial hypomyelination
SCN8A	ATAXIA PANEL	Epilepsy
Niemann Pick C	TARGETED GEN	LISO SM-509 elevated
CLN3	TARGETED GEN	Phenotype
Friedreich's ataxia	TARGETED GEN	Phenotype
Friedreich's ataxia	TARGETED GEN	Phenotype
Friedreich's ataxia	TARGETED GEN	Phenotype
SLC2A1	TARGETED GEN	Hypoglycorrhachia
SLC2A1	TARGETED GEN	Hypoglycorrhachia
ACO2	ATAXIA PANEL	Squint
Angelman Syndrome	METHYLATION TEST	Phenotype - Thinning CC
PLA2G6	TARGETED GEN	Mineral depot

RESULTS

The average age was 12 years, and 58% were male patients (n=14). The average onset of symptoms was at 3 years of age.
The most frequent associated symptoms were cognitive, language and academic difficulties in 13 patients. Hypotonia in 50% and neurodevelopmental delay in 45%, mostly present before 24 months of life. Epilepsy 24%, abnormal movements 21% and pyramidal signs 29%.
In neuroimaging, cerebellar involvement stands out, with atrophy/hypoplasia being observed in 65.2% (n=15). Biomarkers were detected in 20% (n=5).
There was a diagnostic delay of 6 years. Among the confirmed diagnoses are spinocerebellar ataxias (SCA 11, 48, 29, 19), Friedreich's ataxia, ataxia with oculomotor apraxia, ataxia telangiectasia, ARSACS, metabolic (NPC, GLUT1, CNL3, COQ8, ACO2), Angelman syndrome, channelopathies (KCND3, SCN8A, CACNA) and PLA2G6. 20% of the cases (n=5) benefited from specific treatment thanks to confirmation of the diagnosis.



A. Patient at 8 years old, with ataxia, neurodevelopmental encephalopathy and piramidalysm: MRI show cerebellar atrophy. **B.** To 11 years, him MRI to seen mineral depot in Globus pallidus **Neuroaxonal Dystrophy (PLA2G6)**



Patient at 6 years old, with ataxia, piramidalysm, language difficulties. MRI show cerebellar atrophy and Spinal Refinement. **ARSACS**

CONCLUSION

The diagnostic algorithm must be prioritized those that have specific treatment. Clinical findings and complementary tests can guide the conduct of gene-targeted studies, nevertheless, the importance of multigene panels to arrive at a diagnosis should not be ignored.

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