**Supplementary. Table 1:** Demographic and Clinical Characteristics Between Current Study and Previous Studies.

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| **Spinocerebellar Ataxia 5 (SCA5)** | | | | |
| **Study**  (N) | **Demographic Data** | | | **Clinical Manifestations**  (n/N) |
| **Geographical region** | **Symptoms onset**  Mean [range] | **Sex predominance**  (n/N) |
| Alshimemeri et al., 2024 (Current study, N =  3) | Canada | 31.3 years [0 – 64] | Female (3/3) | Common: progressive ataxia (3/3, truncal ataxia, limb ataxia, and mixed ataxia), saccadic abnormalities (3/3), nystagmus (2/3), dysarthria (2/3), tremor (2/3), spasticity (2/3), hyperreflexia (2/3), extensor plantar response (2/3), and sensory changes (2/3). The less common features were weakness (1/3), gaze palsy (1/3), hyporeflexia (1/3), dystonia (1/3), and cognitive impairment (1/3). |
| Ranum et al., 1994 (N = 56) **S1** | United States of America | 30s or 40s [10 – 64] | Male (29/56) | Progressive cerebellar ataxia and dysarthria (unspecified). Juvenile-onset had bulbar manifestations (unspecified). |
| Stevanin et al., 1999 (N = 6) **S2** | France | 27 years [14 – 40] | Male (4/6) | Common features included hyperreflexia (5/6), facial myokymia (4/6), decreased vibration sense (4/6), and gaze-evoked nystagmus (3/6). Less common feature: writer’s cramp (1/6). |
| Bürk et al., 2004 (N = 15) **S3** | Germany | 32.8 years [15 – 50] | Male (10/15) | Common: downbeat nystagmus not suppressed by fixation (15/15), truncal and limb ataxia (14/15), dysarthria (13/15, moderate severity), saccadic abnormalities and gaze-evoked nystagmus (13/15), intention tremor (5/15), and less commonly rest tremor (2/15). |
| Cho et al., 2013 (N = 7) **S4** | United States of America | More than 40 years | Female (4/7) | Progressive pure cerebellar ataxia (7/7). |
| Bian et al., 2021 (N = 8) **S5** | Shandong, China | 46.5 years [32 – 55] | Female (6/8) | Progressive cerebellar ataxia (8/8, truncal, and limb ataxia) and dysarthria (5/8). Less frequent symptoms: choking, coughing (2/8), and cognitive impairment (2/8). |

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| **Spinocerebellar Ataxia 7 (SCA7)** | | | | |
| **Study**  (N) | **Demographic Data** | | | **Clinical Manifestations**  (n/N) |
| **Geographical region** | **Symptoms onset**  Mean [range] | **Sex predominance**  (n/N) |
| Alshimemeri et al., 2024 (Current study, N =  3) | Canada | 29.3 years [16 – 49] | Male (2/3) | Progressive cerebellar ataxia (3/3), dysarthria (3/3), visual impairment (2/3), saccadic abnormalities (2/3), spasticity (2/3), and hyperreflexia (2/3). Less common features: gaze palsy (1/3), dystonia (1/3), sensory changes (1/3), and cognitive impairment (1/3, juvenile-onset). |
| Enevoldson et al., 1994 (N = 54) **S6** | London, United Kingdom | 6 months to 60 years | Male (34/54) | Cerebellar ataxia and dysarthria (54/54), visual loss owing to pigmentary retinopathy (54/54), saccadic abnormalities (unspecified), and upper motor signs (unspecified). Less common features: cognitive impairment (3/54), orofacial dyskinesias, and mild chorea (1/54). |
| Holmberg et al., 1995 (N = 11) **S7** | Västerbotten, Sweden | 3 months to 48 years | Male (6/11) | Common symptoms included ataxia (11/11), dysarthria (11/11), visual impairment (8/10), hyperreflexia (6/10), spasticity (6/10), sensory changes (4/11), extensor plantar response (3/10), gaze palsy (3/10) and hypotonia (3/11). Less common features: nystagmus (1/11), dysphagia (2/11), and mild cognitive impairment (1/11). |
| Johansson et al., 1998 (N = 20) **S8** | Sweden | Infancy to 60 years | Male (11/20) | Cerebellar ataxia (20/20, onset range 1.8-67 years), visual impairment (19/20, onset range 7 months-50 years), dysarthria (19/20, onset range 1.8-67 years), hyperreflexia (14/20), spasticity (11/20), extensor plantar response (11/20), supranuclear ophthalmoplegia (5/20), nystagmus (3/20), dysphagia (5/20), muscle atrophy (7/20), sensory changes (9/20), and cognitive impairment (5/20). |
| Martin et al., 1999 (N  = 26) **S9** | Belgium | 18 to 60 years | Male  (15/26) | Young asymptomatic carriers aged 25-36 had 38-43 repeats with slight electroretinography changes (Group 1). Mildly symptomatic older adults aged 31-92 with 38-44 repeats showed cerebellar disturbances and macular changes (Group 2). Severely affected patients, with 54-55 repeats and onset between 10-25 years, developed blindness and cerebellar signs over 13-39 years (Group 3). Very severely affected children, with over 55 repeats, experienced rapid progression and early death within 2-5 years (Group 4). |
| Paradisi et al., 2016 (N = 25) **S10** | Venezuela | 30.6 years [8 – 60] | Male (15/25) | Progressive ataxia (25/25), dysarthria (25/25), visual impairment (25/25, loss of visual acuity, macular dystrophy, cone-rods dystrophy, photoreceptors disturbance), limb ataxia (11/25), positive Romberg test (12/25), hyperreflexia (11/25), weakness (4/25), and decreased abdominal skin reflexes (7/25). Less common features: nystagmus (5/25), ocular apraxia (2/25), psychiatric disturbances (1/25), intentional/postural tremor (3/25), and sensory changes (2/25). |

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| **Spinocerebellar Ataxia 12 (SCA12)** | | | | |
| **Study**  (N) | **Demographic Data** | | | **Clinical Manifestations**  (n/N) |
| **Geographical region** | **Symptoms onset**  Mean [range] | **Sex predominance**  (n/N) |
| Alshimemeri et al., 2024 (Current study, N =  3) | Canada | 55.67 years [40 – 67] | Male (2/3) | Cerebellar ataxia (3/3, axial, appendicular, and mixed), tremor (3/3), dysarthria (3/3), saccadic abnormalities (3/3), parkinsonism (2/3), sensory changes (2/3), dystonia (1/3), nystagmus (1/3), and hyperreflexia (1/3). |
| Holmes et al., 2001 (N = 10) **S11** | United States of America | 40s [8 – 55 years] | Unspecified | Action tremor (10/10), bradykinesia (9/10), cerebellar ataxia (8/10), hyperreflexia (8/10), paucity of movement (8/10), extensor plantar response (5/10), hypotonia (4/10), psychiatric symptoms (4/10), focal dystonia (2/10), dementia (2/10), and incontinence (2/10). |
| Srivastava et al., 2001 (N = 6) **S12** | India | 37.2 years [26 – 50] | Male (5/6) | Truncal ataxia (6/6), dysarthria (6/6), hyperreflexia (5/6), tremor (4/6), subclinical sensory and motor neuropathy (3/6), facial myokymia (2/6), extensor plantar response (2/6), subclinical sensory neuropathy (2/6), saccadic abnormalities (1/6), nystagmus (1/6), and axial dystonia (1/6). |
| Brussino et al., 2010 (N = 3) **S13** | Ferrara, Italy | 53.3 years [45 – 60] | Female (2/3) | Truncal ataxia (2/3), dysarthria (3/3), limb ataxia (2/3), tremor (2/3) and hyperreflexia (1/3). |
| Dong et. al., 2015 (N = 6) **S14** | China | 52.2 years [46 – 54] | Male (6/6) | Dysarthria (6/6), cerebellar ataxia (5/6), action tremor (5/6), extensor plantar response (4/6), hyperreflexia (2/6), cognitive impairment (2/6), and hyporeflexia (1/6). |
| Choudhury et al., 2018 (N = 21) **S15** | India | 51.33 [± 8.98 years] | Unspecified | Postural tremor (17/21), dystonia (14/21), psychiatric disorders (14/21), head tremor (13/21), intention tremor (12/21), limb ataxia (12/21), dysarthria (12/21), hyperreflexia (12/21), bradykinesia (11/21), urinary problems (11/21), bowel dysfunction (10/21), resting tremor (10/21), spasticity (6/21), painful cramps (6/21), extensor plantar response (4/21), saccadic abnormalities (4/21), orofacial tremor (3/21), rigidity (3/21), nystagmus (3/21), sensory changes (3/21), cognitive impairment (3/21), diplopia (2/21), voice tremor (2/21), and bulbar features (1/21). |
| Ganaraja et al., 2022 (N = 49 ) **S16** | India | 46.38 [± 11.7 years] | Male (34/49) | Tremor (47/49), ataxia (36/49), dysarthria (28/49), head tremor (27/49), hyperreflexia (23/49), voice tremor (21/49), bradykinesia (15/49), saccadic abnormalities (13/49), cognitive impairment (11/49), nystagmus (10/49), urinary disturbance (10/49), spasticity (9/49), rigidity (7/49), jaw tremor (5/49), tongue tremor (5/49), extensor plantar response (4/49), psychiatric disturbance (4/49), dystonia (4/49), myoclonus (3/49), chorea (1/49), and sensory changes (1/49). |

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| **Spinocerebellar Ataxia 14 (SCA14)** | | | | |
| **Study**  (N) | **Demographic Data** | | | **Clinical Manifestations**  (n/N) |
| **Geographical region** | **Symptoms onset**  Mean [range] | **Sex predominance**  (n/N) |
| Alshimemeri et al., 2024 (Current study, N =  4) | Canada | 31.25 years [10 – 49] | No difference (2/2) | Ataxia (4, limb and mixed), saccadic abnormalities (4/4), dysarthria (3/4), nystagmus (2/4), spasticity (2/4), hyperreflexia (2/4), tremor (2/4), dystonia (2/4), sensory changes (2/4), weakness (1/4), and extensor plantar response (1/4) |
| Yamashita et al., 2000 (N = 9) **S17**, Hiramoto et al., 2006 (N = 7, 5 affected) **S18**, Miura et al., 2009 (N = 3) **S19** | Japan | 27.7 years [12 – 42], 45 years [14 – 70], 31.3 years [20 – 48] | Female (5/9), female (3/5), female (2/3) | Truncal and limb cerebellar ataxia, axial action myoclonus, hyporeflexia, hypotonia, saccadic abnormalities, gaze-evoked nystagmus, dysarthria, impaired tandem gait, seizure with cognitive impairment, intermittent cervical dystonia and head tremor, positional vertigo, bilateral facial weakness, and retinal degeneration. |
| Stevanin et al., 2004 (N = 14) **S20**, Klebe et al., 2005 (N = 15) **S21** | France | Childhood to 60 years, 33.5 years [15 – 60] | Female (10/14), female (10,/15) | Truncal ataxia, hyperreflexia, dysarthria, nystagmus, reduced vibration sense, facial myokymia, cognitive impairment, tremor, hand chorea, head tremor, upward gaze palsy, extensor plantar response, dysphagia, and hearing impairment are all reported features. Less common symptoms include intermittent diplopia, rippling of hand muscles, hyporeflexia, vertical gaze palsy, saccadic abnormalities, myoclonus, rigidity, and cataracts. |
| Chen et al., 2005 (N = 50, 9 families) **S22** | United States of America | 33.8 years [5 – 60] | Unspecified | Truncal ataxia (50/50), dysarthria (50/50), hyporeflexia (30/50), and hyperreflexia (21/50). Less common features include axial myoclonus (5/50), depression (3/50), memory impairment (2/50), urinary incontinence (1/50), and severe dysphagia (1/50). |
| Fahey et al., 2005 (N = 6) **S23** | Australia | 31.3 years [19 – 44] | Female | Truncal and limb ataxia (6/6), dysarthria (6/6), hyperreflexia (6/6), saccadic abnormalities (5/6), failure to suppress vestibulo–ocular reflex (5/6), nystagmus (3/6), spasticity (2/6), distal sensory changes (2/6), and truncal tremor (1/6). |
| Vlak et al., 2006 (N = 7), **S24** Foncke et al., 2010 (N = 3) **S25** | Netherlands | 22 years [3 – 45], Childhood to 13 years | Female (4/7), male (3/3) | Truncal ataxia, limb ataxia, memory complaints, saccadic abnormalities, mild dysarthria, hyperreflexia, multifocal myoclonus/chorea, postural tremor, and extensor plantar response. Additionally noted are distal sensory disturbance, dystonia affecting the trunk, feet, and neck, and trunk tremor. Less frequent symptoms include restless legs syndrome. |
| Koht et al., 2012 (N = 13) **S26** | Norway | 28 years [10 – 45] | Male (9/13) | Saccadic abnormalities (13/13), Truncal and limb ataxia (11/13), spasticity (10/13), dysarthria (10/13), nystagmus (7/13), extensor plantar response (7/13), hyperreflexia (6/13), reduced vibration sense (6/13), hyporeflexia (4/13), mild learning difficulties (3/13), impaired touch and pain sensation (2/13), cognitive impairment (1/13), and conductive hearing impairment (1/13). |
| Ganos et al., 2014 (N  = 9) **S27** | Germany | Childhood – 49 | Female (7/9) | Truncal and limb ataxia (9/9), dystonia (5/9, focal, task-specific, or segmental), dysarthria (1/9), spasticity (1/9), limb and trunk myoclonus (1/9). |
| Chelban et al., 2018 (N = 25) **S28** | Europe | 30.6 years  [3 – 66] | Unspecified | Truncal and limb ataxia (25/25), dysarthria (23/25), nystagmus (14/25), saccadic abnormalities (9/25), upper motor signs (7/25), sphincter dysfunction (5/25), dysphagia (3/25), myoclonus (3/25, peri-oral, facial, limb, and truncal), hyperreflexia (3/25, one case mixed with hyporeflexia), dystonia (2/25, limb and cervical), cognitive impairment (2/25), postural tremor (2/25, trunk and limb), parkinsonism (1/25), peripheral neuropathy (1/25), reduced vibration sense (1/25), and hearing impairment (1/25). |
| De Michele et al., 2022 (N = 14) **S29** | Italy | 32.64 years [0 –  66] | No difference (7/7) | Truncal ataxia (14/14), limb ataxia (11/14), dysarthria (11/14), hyperreflexia (6/14), saccadic abnormalities (5/14), extensor plantar response (5/14), sphincter dysfunction (5/14), spasticity (4/14), reduced vibration (3/14), focal dystonia (3/14), tremor (3/14), cognitive impairment (3/14), intellectual disability (3/14), hyporeflexia (2/14), depression (2/14, one of whom had psychosis), nystagmus (1/14), gaze palsy (1/14), and erectile dysfunction (1/14). |
| Duggirala et al., 2023 (N = 3) **S30** | Argentina | 17 and 19 years | Female (2, 66.67) | Truncal and limb ataxia (3/3), dysarthria (3/3), nystagmus (3/3), gaze palsy (3/3), hyperreflexia (3/3), depression (2/3), pes cavus (2/3), proprioception loss (1/3), and proximal amyotrophy (1/3). |

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| **Spinocerebellar Ataxia 15 (SCA15)** | | | | |
| **Study**  (N) | **Demographic Data** | | | **Clinical Manifestations**  (n/N) |
| **Geographical region** | **Symptoms onset**  Mean [range] | **Sex predominance**  (n/N) |
| Alshimemeri et al., 2024 (Current study, N =  2) | Canada | 60 and 61 years | Female only (2/2) | Progressive axial and limb ataxia (2/2), dysarthria (2/2), upper motor signs including spasticity of upper limbs (2/2), weakness (2/2), hyperreflexia (2/2), and sensory changes (2/2). Less common features observed include extensor plantar response (1/2), nystagmus (1/2), saccadic abnormalities (1/2), and cognitive impairment (1/2). |
| Storey et al., 2001 (N = 8) **S31** | Australia | 26 years [10 – 50] | Female (5/8) | Common features included progressive limb ataxia (6/8), truncal ataxia (5/8), and dysarthria (5/8). Less common features included gaze-evoked nystagmus (3/8), saccadic abnormalities (3/8), failure to suppress vestibulo–ocular reflex (3/8), and hyperreflexia (3/8). Rare findings included dysphagia (2/8), mild head titubation (2/8), mild postural tremor (1/8), and movement-induced oscillopsia (1/8). |
| Hara et al., 2004 (N = 10) **S32** | Akita, Japan | 30.8 years [27 – 47] | Male (7/10) | Very slowly progressive truncal and limb ataxia (10/10), postural and action tremor (7/10), hyperreflexia (7/10, upper 3/10, lower 1/10, both 3/10), dysarthria (4/10), gaze nystagmus (4/10), reduced vibration (2/10), and hyporeflexia (1/10). |
| Dudding et al., 2004 (N = 20) **S33** | Australia | Unspecified, childhood | Female (16/20) | Most patients had learning problems (19/20), impaired tandem gait (17/20), truncal ataxia (12/20), dysarthria (11/20), and limb ataxia (7/20). Some cases had evidence of dysdiadochokinesia (2/20) and nystagmus (1/20). |
| Di Gregorio et al., 2010 (N = 12) **S34** | Italy | 49.3 years [25 – 72] | No difference | Commonly presenting with progressive truncal ataxia (12/12), nystagmus (10/12), dysarthria (10/12), limb ataxia (7/12), upper motor signs (hyperreflexia 5/12, extensor plantar response 3/12), dysphagia (5/12). Rare features include hyporeflexia (2/12), facial myokymia (2/12), buccolingual dyskinesias with cognitive impairment (2/12), and postural tremor (1/12). |
| Novak et al., 2010 (N = 3) **S35** | United Kingdom | Adolescence to mid-30s | Male (2/3) | Progressive cerebellar ataxia (3/3), limb ataxia (3/3), mild dysarthria (3/3), nystagmus (3/3), and saccadic abnormalities (3/3). Rare features include a case of myoclonus (1/3) and another case of hyperreflexia (1/3). |
| Castrioto et al., 2011 (N = 7) **S36** | Central Italy | 57 years to late-70s | Male (5/7) | Truncal ataxia (6/7), dysarthria (4/7), limb ataxia (3/7), saccadic abnormalities (3/7), hypotonia (3/7), hyperreflexia (3/7), chorea (2/7, mouth and upper limbs), cognitive impairment (1/7), dysphagia (1/7). Four patients were deceased by the time of assessment in their 80s. |
| Synofzik et al., 2011 (N = 10) **S37** | Germany | 43.8 years [30 – 67] | Unspecified | Truncal disturbance (10/10), limb dysmetria (upper 2/10, lower 1/10, both 7/10), horizontal gaze-evoked nystagmus (8/10 with 1 case in all directions), saccadic abnormalities (9/10), tremor (postural 7/10, intention tremor 10/10), dysarthria (5/10), dysphagia (4/10), pyramidal signs (2/10), cognitive impairment (1/10) and psychiatric manifestations (1/10). |
| Marelli et al., 2011 (N= 13) **S38** | France | 34.23 years [18 – 66] | Male (9/13) | Truncal ataxia (13/13), limb ataxia (12/13), dysarthria (11/13), horizontal gaze-evoked nystagmus (10/13), and saccadic abnormalities (7/13). Few patients had intermittent transient diplopia (4/13), upper limbs postural tremor (3/13), pyramidal signs (2/13), and mild swallowing difficulties (2/13). |
| Gazulla et al., 2023 (N = 6) **S39** | Spain | 51.83 [40 – 70] | Female (4/6) | Common findings were truncal ataxia (6/6), limb ataxia (6/6), dysarthria (4/6), and horizontal nystagmus (3/6). Rare findings included chorea (2/6) in two siblings and tremor (1/6) in another kindred. Two patients died at ages 60 and 96. |

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| **Spinocerebellar Ataxia 28 (SCA28)** | | | | |
| **Study**  (N) | **Demographic Data** | | | **Clinical Manifestations**  (n/N) |
| **Geographical region** | **Symptoms onset**  Mean [range] | **Sex predominance**  (n/N) |
| Alshimemeri et al., 2024 (Current study, N =  3) | Canada | 46 years [32 – 61] | Male (2/3) | Axial ataxia (1/3), limb ataxia (1/3), mixed ataxia (1/3), saccadic abnormalities (3/3), nystagmus (2/3), gaze palsy (2/3), dystonia (2/3), cognitive impairment (2/3), dysarthria (1/3), upper motor signs of spasticity, weakness, hyperreflexia (1/3), and sensory changes (1/3). |
| Cagnoli et al., 2006 (N = 11) **S40** | Italy | 19.5 years [12 – 36] | Male (6/11) | Commonly present: slowly progressive mild truncal ataxia (11/11), dysarthria (11/11), limb ataxia (11/11), hyperreflexia (9/10), gaze-palsy (8/11), and gaze-evoked nystagmus (5/11). Less frequently observed features included palpebral ptosis (6/10), saccadic abnormalities (6/10), hypertonia (3/9), and extensor plantar response (4/8). |
| Edener et al., 2010 (N = 5) **S41** | Germany | 10 years [3 – 28] | Male (3/5) | Early-onset juvenile ataxia; truncal ataxia (5/5), limb ataxia (5/5), dysarthria (4/5), hyperreflexia (4/5), cognitive impairment (2/5), gaze-evoked nystagmus (1/5), and hypotonia (1). |
| Szpisjak et al., 2017 (N = 5) **S42** | Hungary | 18.2 years [14 – 28] | Female (3/5) | Progressive truncal ataxia (5/5), limb ataxia (5/5), gaze-evoked nystagmus (5/5), saccadic abnormalities (5/5), hypotonia (5/5), dysphagia (3/5), hyperreflexia (3/5), impaired visual acuity (2/5), and diplopia (2/5). |
| Caporali et al., 2020 (N = 12) **S43** | Italy | Infancy to 50 years | Male (8/12) | Visual loss and optic atrophy (11/12), sensorineural deafness (4/12), ataxic-spastic gait (3/12), dysmetria, dysarthria, dystonia (3/12), cerebellar and cerebral atrophy (2/12), movement disorders like myoclonus, dystonia, and chorea (2/12). |

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| **Spinocerebellar Ataxia 34 (SCA34)** | | | | |
| **Study**  (N) | **Demographic Data** | | | **Clinical Manifestations**  (n/N) |
| **Geographical region** | **Symptoms onset**  Mean [range] | **Sex predominance**  (n/N) |
| Alshimemeri et al., 2024 (Current study, N =  2) | Canada | 13 years and 60 years | No difference (1/2) | Progressive cerebellar ataxia of gait and limbs (2/2), saccadic abnormalities (2/2), nystagmus (1/2), sensory changes (1/2), dysarthria (1/2), tremor (1/2), cognitive impairment (1/2), congenital ichthyosis (1/2). |
| Giroux et al., 1972 (N = 25) **S44** | Canada | Skin: early infancy. Ataxia: [40 to 45 years] | Male (14/25) | Papulosquamous plaques from birth, intensity varying and subsiding in summer (25/25), cutaneous symptoms (papulosquamous eruptions, ichthyosis) disappearing around age 25 and sometimes reappearing after age 40 (25/25), and a progressive neurological syndrome including truncal ataxia, nystagmus, dysarthria, hyporeflexia (25/25). Facial weakness and fasciculations of the forearm (1/25) were reported. |
| Cadieux-Dion et al., 2014 (N = 19, 15 affected and 4 carriers) **S45** | Canada | Skin: early infancy. Ataxia: 51 years [32 – 72] | Male (9/15) | Erythrokeratodermia variabilities typically resolve by age 25 (/15), ataxia only (1/15), or a combination of both phenotypes (11/15). Rarely axial rigidity (1/19) |
| Ozaki et al., 2015 (N = 11, 9 affected) **S46** | Tokyo, Japan | 33.9 years [13 – 56] | Male (5/9) | Truncal and limb ataxia (9/9), dysarthria (9/9), nystagmus (7/9), hyperreflexia (7/9), saccadic abnormalities (5/9), bladder disturbance (4/9), gaze palsy (3/9), extensor plantar response (3/9), hyporeflexia (2/9), constipation (2/5, and akinesia and myoclonus (1/9) |
| Xiao et al., 2019 (N = 10, 7 affected, 6 described) **S47** | United States of America | 42.6 years [38 –57] | Female (4/7) | Truncal ataxia (10/10), limb ataxia (8/10), dysarthria (6/10), horizontal nystagmus (5/6), vertical nystagmus (4/6), vertical gaze palsy (1/6), saccadic abnormalities (5/6), hyperreflexia (6/6), retinitis pigmentosa (4/8). |
| Beaudin et al., 2020 (N = 19, 9 affected) **S48** | Canada | 47 years [32 – 60] | Unspecified | Truncal and limb ataxia (9/9), dysarthria (9/9), saccadic abnormalities (8/9), nystagmus (7/9), tremor (3/9), sensory changes (3/9), history of gingivitis (3/9), hyporeflexia (2/9), urinary incontinence (2/9), extrapyramidal rigidity (1/9), cognitive impairment (1/9), asymptomatic retinal lesion (1/9), and nummular dermatitis (1/9). |
| Nishide et al., 2023 (N = 4) **S49** | Australia | Around 10 to 57 years | Female (3/4) | Truncal ataxia (4/4), limb ataxia (2/4), saccadic abnormalities (4/4), gaze-evoked nystagmus (3/4), and hyperreflexia (1/4) |

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| **Spinocerebellar Ataxia 35 (SCA35)** | | | | |
| **Study**  (N) | **Demographic Data** | | | **Clinical Manifestations**  (n/N) |
| **Geographical region** | **Symptoms onset**  Mean [range] | **Sex predominance**  (n/N) |
| Alshimemeri et al., 2024 (Current study, N =  3) | Canada | 59 and 67 years | Female (2/3) | Progressive cerebellar ataxia (1/2), saccadic abnormalities (2/2), nystagmus (2/2), dysarthria (2/2), gaze palsy (1/2), cognitive impairment (1/2), hyporeflexia (1/2), dystonia (1/2), and parkinsonism (1/2). |
| Wang et al., 2010 (N = 11 ) **S50** | China | 43.1 [40 – 48] | Female (6/11) | Truncal and limb ataxia (11/11), saccadic abnormalities (11/11), pseudobulbar palsy (11/11), dysarthria (10/11), hyperreflexia (10/11), extensor plantar response (5/11), tremor (4/11), spasmodic torticollis (4/11), impaired proprioception 3/11), and hypertonia (3/11), |
| Li et al., 2013 (N = 9, 4 affected) **S51** | Hong Kong, China | Childhood to 40s | Female (3/4) | Spasticity (4/4), hyperreflexia (4/4), extensor plantar response, truncal ataxia (3/4), and delayed speech development with mild cognitive impairment (1/4) |
| Guo et al., 2014 (N = 4) **S52** | Taiwan, China | 29.2 years [15 – 56] | No difference | Truncal ataxia (4/4), limb ataxia (4/4), dysarthria (4/4), tremor (4/4), hyperreflexia (4/4), saccadic abnormalities (4/4), nystagmus (1/4), impaired proprioception (1/4), and cognitive impairment (1/4) |
| Maass et al., 2023 (N = 2) **S53** | Germany | 22 years and 51 years | Female | Limb ataxia (2/2), dysphagia (2/2), truncal ataxia (1/2), dysarthria (1/2), tremor (1/2), saccadic abnormalities (1/2), loss of vibration sense (1/2), positive Romberg test (1/2), urinary and bowel incontinence (1/2), mild cognitive and language deficit (1/2) |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Spinocerebellar Ataxia 36 (SCA36)** | | | | |
| **Study**  (N) | **Demographic Data** | | | **Clinical Manifestations**  (n/N) |
| **Geographical region** | **Symptoms onset**  Mean [range] | **Sex predominance**  (n/N) |
| Alshimemeri et al., 2024 (Current study, N =  2) | Canada | 45 years and 54 years | No difference | Progressive axial and limb ataxia (2/2), saccadic abnormalities (2/2), dysarthria (2/2), nystagmus (1/2), hyperreflexia (1/2), tremor (1/2), square-wave jerks (1/2) and hearing impairment/profound deafness (1/2). |
| Kobayashi et al., 2011 (N =17) **S54** | Chugoku, Japan | 52.8 years [43 – 58] | Male (11/17) | Cerebellar ataxia (17/17), muscle atrophy, mainly proximal and fasciculations (9/17), tongue atrophy, and fasciculations (14/17). |
| Garcia Murias et al., 2012 (N = 44) **S55** | Northwestern, Spain | 52.8 years [29 – 65] | Female (24/44) | Common features: truncal ataxia (43/44), limb ataxia (38/44), saccadic abnormalities (24/44), dysarthria (40/44), hearing impairment (33/44), tongue fasciculation (24/44), extensor plantar response (17/44), hyperreflexia (16/44), hypertonia (8/44). Less common: gaze palsy (8/44), horizontal nystagmus (4/44), ptosis (4/44), oculomotor apraxia (2/44), dysphagia (2/44), cognitive dysfunction (2/44), hand tremor (2/44), head tremor (1/44), tongue tremor (1/44) diplopia (1/44), urinary and bowel incontinence (1/44), myoclonus of limbs and neck(1/44). |
| Ikeda et al., 2012 ( N = 14) **S56** | Asida River, Japan | 53.1 years [47 – 58] | Male (8/14) | Truncal and limb ataxia with varying severity (14/14), dysarthria (14/14), tongue atrophy (14/14), tongue fasciculations (13/14), hyperreflexia (11/14), muscle atrophy in limbs and trunk, predominantly distal part (9/14), fasciculation (9/14), dysphagia (8/14), muscle weakness (5/14), gaze nystagmus (4/14), hypertonia, predominantly in lower extremities (4/14), hypotonia in upper extremities (4/14), and increased jaw reflex (2/14). |
| Obayashi et al., 2015 (N = 28) **S57** | Western region of Japan, France, Spain, and Germany. | 50.7 years [39 – 65] | Female (16/28) | Truncal ataxia from mild to severe (23/28), dysarthria (19/28), hyperreflexia (17/28), hearing impairment (15/28), saccadic abnormalities (13/28), and decreased vibration (13/28). Less common features: postural tremor (8/28), cognitive impairment (7/28), ptosis (6/28), hyporeflexia (5/28), tongue atrophy (4/28), tongue fasciculations (3/28), gaze palsy (3/28), nystagmus (3/28), diplopia (1/28), strabismus (1/28), optic atrophy (1/28), muscle fasciculations (1/28)**,** fascial weakness (1/28), and dysphagia (1/28). |
| Lee et al., 2016 (N = 5) **S58**, Zeng et al., 2016 (N = 14) **S59**, Xie et al., 2021 (N = 9) **S60**, Zou et al., 2023 (N = 6) **S61** | China | 44.8 years [40 – 50], 50.3 years [45 – 62], 50.2 years [44 – 65], 44.5 years [40 – 50] | Male (3/5), Male (10/14), Female (6/9), Female (4/6) | Truncal and limbs ataxia, dysarthria, saccadic abnormalities, nystagmus, gaze palsy, pyramidal signs (hypertonia, hyperreflexia, extensor plantar response), muscle atrophy and fasciculation, tongue atrophy and fasciculation, dysphagia, hearing impairment, and cognitive impairment. Rare features: muscle cramps, reduced vibration, extrapyramidal symptoms, postural tremor, autonomic symptoms, insomnia, affective disorders, seizures, and presymptomatic. |
| Valera et al., 2017 (N = 6) **S62** | United States | 44.5 years [35 – 50] | Male (5/6) | Truncal ataxia (5/6), saccadic abnormalities (5/6), dysarthria (4/6), hyperreflexia (4/6), fasciculations (3/6, face, tongue, and right biceps), limb ataxia (3/6), and hearing impairment (1/6). |
| Baviera-Muñoz et al., 2023 (N = 37, 28 described) **S63** | Spain | 52.5 years [44 – 67] | Male (17/28) | Truncal and limb ataxia (28/28), saccadic abnormalities (20/28), gaze palsy (18/28), hearing impairment (18/28), pyramidal signs (14/28), horizontal nystagmus (13/28), cognitive impairment (10/28), ptosis (9/28), dysphagia (9/28), dystonia (6/28, 3 cervical, 3 hand), tremor (4/28), tongue fasciculations (4/28), bradykinesia (3/28), sensory disturbance (2/28), bulging eyes (2/28), tongue atrophy (1/28), muscle fasciculation (1/28), hyporeflexia (1/28), and cramps (1/28). |
| Lam et al., 2023 (N = 7) **S64** | United Kingdom | 48.9 years [28 – 62] | Male (5/7) | Slowly progressive truncal/gait ataxia (7/7), limb ataxia (7/7), hyperreflexia (5/7), dysarthria (4/7), hypertonia (2/7), saccadic abnormalities (2/7), gaze palsy (2/7), proximal weakness (2/7), dysphagia (2/7), cognitive impairment (2/7), nystagmus (1/7), proximal muscle atrophy (1/7), extensor plantar response (1/7), hearing impairment (1/7), reduced vibration (1/7), ptosis (1/7), and urinary incontinence (1/7). |

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