

Rater: _____ date: _____ Patient code: _____

Inventory of Non-Ataxia Signs (INAS)

NA: not assessed / no information available Mod: moderate

Part one: clinical findings

Please report the (undoubtful) occurrence of signs also if abnormal findings occur only on one side

Reflexes

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|----------------------------|------------------------------|-------------------------------------|---------------------------------|--------------------------|
| 1. Biceps (BTR) | <input type="radio"/> normal | <input type="radio"/> hyperreflexia | <input type="radio"/> areflexia | <input type="radio"/> NA |
| 2. Patellar (PTR) | <input type="radio"/> normal | <input type="radio"/> hyperreflexia | <input type="radio"/> areflexia | <input type="radio"/> NA |
| 3. Achilles (ATR) | <input type="radio"/> normal | <input type="radio"/> hyperreflexia | <input type="radio"/> areflexia | <input type="radio"/> NA |
| 4. Extensor plantar reflex | <input type="radio"/> none | <input type="radio"/> unilateral | <input type="radio"/> bilateral | <input type="radio"/> NA |

Motor symptoms

- | | | | | | |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 5. Spasticity | None | Mild | Mod | Severe | NA |
| Gait | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Upper Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lower Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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|-------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 6. Paresis | None | Mild | Mod | Severe | NA |
| Face/tongue | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| UL proximal | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| UL distal | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| LL proximal | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| LL distal | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 7. Muscle atrophy | None | Mild | Mod | Severe | NA |
| Face/tongue | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| UL proximal | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| UL distal | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| LL proximal | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| LL distal | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 8. Fasciculations | None | Mild | Mod | Severe | NA |
| Face/tongue | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Upper Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lower Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 9. Myoclonus | None | Mild | Mod | Severe | NA |
| Face/tongue | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Trunk | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Upper Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lower Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 10. Rigidity (should be obvious without movement of opposite limb) | None | Mild | Mod | Severe | NA |
| Axial | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Upper Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lower Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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|------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 11. Chorea/Dyskinesia | None | Mild | Mod | Severe | NA |
| Face/tongue | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Neck | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Trunk | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Upper Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lower Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 12. Dystonia | None | Mild | Mod | Severe | NA |
| Face/tongue | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Neck | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Trunk | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Upper Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Lower Limbs | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| 13. Resting tremor | None | Mild | Mod | Severe | NA |
| | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

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Sensory symptoms

14. Impaired vibration sense (tested at malleolus ext)	None (8/8)	Mild (>5/8)	Mod (2-5/8)	Severe (<2/8)	NA
Right foot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Left foot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Ophthalmological findings

Testing of fixation and smooth pursuit

	No	Yes	NA
15. Broken up smooth pursuit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Square wave jerks on fixation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Downbeat-nystagmus on fixation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18. Gaze evoked-nystagmus on horizontal testing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19. Gaze evoked-nystagmus on vertical testing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20. Ophthalmoparesis on horizontal gaze	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21. Ophthalmoparesis on vertical gaze	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Testing of fast saccades

	No	Yes	NA
22. Slowing of saccades	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23. Hypometric saccades	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24. Hypermetric saccades	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Testing of visual function

25. Impaired visual acuity (loss of visual acuity <0.6 for binocular sight in distance testing)	No	Yes	NA
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part Two: reported abnormalities

26. Double vision	None <input type="radio"/>	Mild <input type="radio"/>	Mod <input type="radio"/>	Severe/constant <input type="radio"/>	NA <input type="radio"/>
27. Dysphagia	None <input type="radio"/>	Mild <input type="radio"/>	Mod <input type="radio"/>	Severe/ tube feeding <input type="radio"/>	NA <input type="radio"/>
28. Urinary dysfunction	None <input type="radio"/>	Mild <input type="radio"/>	Mod <input type="radio"/>	Severe/ catheter <input type="radio"/>	NA <input type="radio"/>
29. Cognitive impairment (according to examiner)	None <input type="radio"/>	Mild <input type="radio"/>	Mod <input type="radio"/>	Severe <input type="radio"/>	NA <input type="radio"/>

30. Other clinical findings or reported abnormalities

(free text) _____

INAS count

The INAS can be used for clinical description, but is not used as a scale and it is not appropriate to use sum scores.

However, the INAS can be transformed in a set of 16 binary variables

- rated as “present”, if at least one corresponding item or location is rated as mild OR moderate OR severe.
- rated as “absent” if ALL corresponding items or locations are rated as normal
- rated as missing if at least one corresponding item or location is missing AND other corresponding items or locations rated as normal.

The 16 variables are grouped from the INAS form as follows:

1 Hyperreflexia	items 1, 2, 3
2 Areflexia	items 1, 2, 3
3 Extensor plantar	item 4
4 Spasticity	item 5
5 Paresis	item 6
6 Muscle atrophy	item 7
7 Fasciculations	item 8
8 Myoclonus	item 9
9 Rigidity	item 10
10 Chorea/dyskinesia	item 11
11 Dystonia	item 12
12 Resting tremor	item 13
13 Sensory symptoms	item 14
14 Urinary dysfunction	item 28
15 Cognitive dysfunction	item 29
16 Brainstem oculomotor signs	items 20, 21, 22

These 16 binary variables can be summed up to a simple sum score, the INAS count, that can be used as a semiquantitative variable of extracerebellar involvement in SCA.