Taking a neurological history

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Abstract

A detailed neurological history of the anatomical location of the lesion(s) within the nervous system; the nature of the pathological process and which physical signs to elicit when examining the patient. Taking a good history requires a basic knowledge of the hierarchical organization of the nervous system and the principles of functional localization. Characterizing the pattern of neurological disease over time is important: episodic, fluctuating and progressive courses of symptoms are the most common. A clear description of events before, during and after an episode (from an eyewitness if necessary) is essential. Different symptom complexes can point the clinician towards cortical, extrapyramidal, spinal, radicular, peripheral nerve and neuromuscular pathologies. These presentations are discussed.

Keywords Assessment; examination; history; neurological symptoms; neurology

Key points

- Ask the patient to tell their story in their own words
- Explore each symptom in detail, evaluating the evolution and the way the symptoms affect the ability to function
- Ask for an eyewitness account when cognition or consciousness is involved
- If you cannot make a neurological diagnosis, take the history again before arranging investigations

What is different about a neurological history?

The neurological history should be a focused, goal-directed exercise that seeks to answer the following questions.

- Which part of the nervous system is effected by 'a pathological process' and is causing the symptoms (where is the lesion)? Is it a *single* lesion or are there *multiple* diffuse lesions? Alternatively, is there a diffuse problem affecting many neurological systems?
- What is the underlying pathological process (e.g. vascular, inflammatory, degenerative)?
- Is this a purely neurological problem or a neurological manifestation of a systemic disease?

A full neurological examination for every possible sign is not always practical, and a clear history directs the examination to the most relevant aspects. A collateral history from a relative or caregiver is often helpful, particularly with loss of consciousness or a recent change in behaviour or cognitive ability. Where possible, permission should be sought from the patient before obtaining this. Finally, although one should always beware of ascribing symptoms to the physiological cause rather than the 'brain' without full investigation. There is an overlap of neurology with psychiatry, and the patient's affect, mood and other psychiatric aspects should always be considered during the encounter.

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Approach to the neurological history

A friendly and relaxed interview style will allow the patient to describe symptoms in their own words. Open as well as closed questions should be used. Each symptom should be carefully explored with regard to its severity and time course, clarifying what the individual means by their symptoms. Try to understand how the individual's work, social life and emotions have been affected. If the history is complex, a brief initial overview can help to outline the 'shape' of the history. Patients often find it difficult to describe neurological symptoms. It is usually best to take the history in temporal sequence, asking the individual to report the very first symptoms and subsequent developments. Some useful questions to ask in different situations are included in the last section of this article.

Basic information

Age: the most likely cause for any particular symptom varies at different ages.

Handedness: almost all right-handed individuals and at least three-quarters of left-handed people are left-hemisphere dominant for language, which is important when localizing a lesion.

Presenting complaint: the patient's most troubling problem (e.g. headache, loss of consciousness) is sometimes difficult for them to identify, particularly if they have impaired insight. It is useful to consider the evolution of the symptoms. Formulating a list of problems can help clarify their sequence and importance. If there is an established diagnosis, such as multiple sclerosis (MS), ask about the new symptom(s). Is it likely to be explained by their disease process?

How have the patient's symptoms and disease changed over time?

Careful identification of any pattern of symptom progression is important in differential diagnosis.

Discrete episodes

If a patient has episodes, such as seizures or blackouts, start by asking about the most recent event. Structure the history clearly under the headings 'Before', 'During' and 'After'. Then draw a simple chart of the episodes in time.

Describe each episode

- What was happening immediately before the episode? (The circumstances sometimes help to determine the cause.)
- What was the patient doing, and how did their symptoms affect them?
- In what position was the patient (lying, standing, seated)?
- Were there factors such as sleep deprivation or alcohol excess that may have lowered their seizure threshold?
- Do recurrent events always happen upon standing (suggesting postural hypotension)?
- With vertigo, recurrence on turning the head or sitting up from lying flat can indicate benign paroxysmal positional vertigo.
- The availability of thrombolysis for stroke means that the time of onset of symptoms needs to be precisely noted.
- What happened during the episode? Clarify the sequence of events as demonstrated in Figure 1. An eyewitness is invaluable, particularly if the patient loses consciousness. If seizures are a possibility, ask about features that can help their differentiation from syncope, for example triggering factors, the presence of presyncopal symptoms (nausea, greying of vision, muffled hearing), pallor and sweating, occurrence of tongue-biting, duration of loss of consciousness, and the nature and duration of the postictal phase. Incontinence and jerking movements (brief in the case of syncope) can occur in either. Also consider the possibility of psychogenic non-epileptic seizures.[1]

Pattern of episodes over time: if symptoms are recurrent, ask about the timing of the first episode and the periodicity and duration of subsequent events. With epilepsy, it is helpful to ask about the patient's longest seizure-free interval. In women, migraine or seizures can occur in association with menstruation or ovulation.[2,3]

It helps to record this information in a methodical, objective way as pictured in Figure 2. If the individual has had multiple (≥10) episodes of altered consciousness, obtain a history of the first episode, the worst episode and the most recent episode. If seizures have recurred after a period of seizure freedom, possible causes should be sought.

Fluctuating levels of severity

Pathological processes, such as inflammatory or autoimmune disease (common examples being MS and myasthenia gravis), often present with episodic symptoms but with a longer time frame. Patients may be asymptomatic between exacerbations. The level of function at different time points, especially before and after treatment, should be assessed. Useful questions include the time taken to perform a certain task, how far the patient can walk unaided and how many activities of daily living, such as washing and dressing, they can perform alone. These factors are often formalized in scoring systems, such as the Expanded Disability Status Scale for MS[4] or the more general Barthel Index.[5] With suspected myasthenia gravis, the patient should be quizzed about fatigability, whereas in MS, symptoms may be more pronounced in summer or after a hot bath (Uhthoff's phenomenon). The pattern of symptoms in MS is particularly important in determining the subtypes of disease (e.g. relapsing–remitting; Figure 3).

Progressive disease

Other neurological diseases are progressive: examples include Alzheimer's disease and motor neuron disease (MND). Some degenerative conditions can be susceptible to treatments that delay progression (Figure 4), but these rarely reverse the underlying disease process. It is important to determine the speed of symptom progression in order to plan management. When did symptoms

A line chart showing a patient's description of the events surrounding their most recent loss of consciousness

Visualizing the pattern of an individual episode helps the clinician distinguish this problem as a probable seizure disorder and sets the scene for a more focused, organized history.

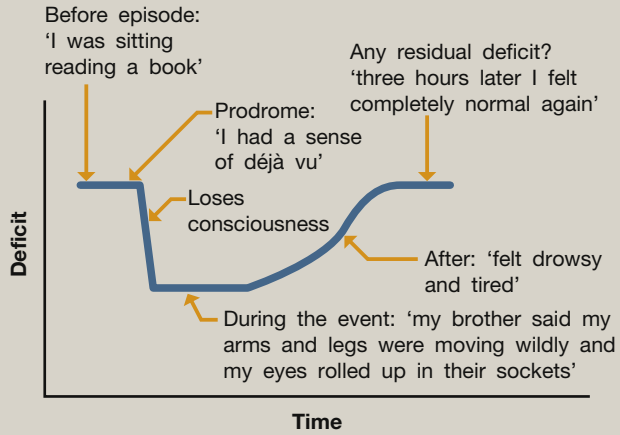

Figure 1

Occurrence and severity of episodes for a patient with migraine headaches

When presented in this way it is clear that these episodes were at one stage entirely absent but then returned. Once this had been established the clinician was able to go on and clarify what had specifically changed at that point; in this case eating chocolate – a migraine trigger – whereas the patient was previously on a diet.

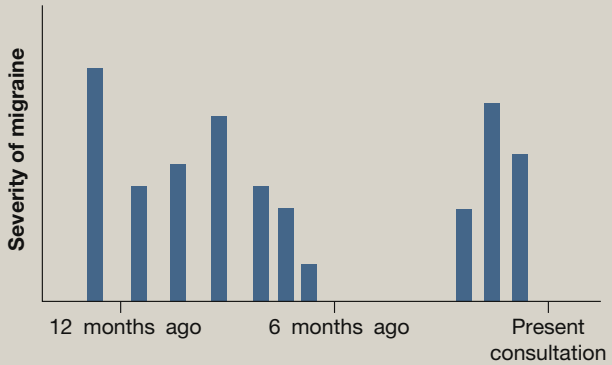

Figure 2