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Neurological Expertise and Courts of Law: It Is All About Trauma, Maybe Not?

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Abstract

Neurological expertise is requested from courts of law in some particular cases, both in criminal and civil proceedings. With the judiciary field falling mostly within the scope of legal medicine professionals, and forensic psychiatrists, the role of an expert from other medical specialties seems unfamiliar. While considering the neurological deficits and diagnoses, experts rely on classificatory systems that highly fragmentize isolated somatic injuries. Such a stand might not reflect the impact of the injury or deficit for the patient as a whole.

Neurotraumatology has been the main field where expertise is necessary, following civil suits, litigation, malpractice, and remuneration requests. Other neurological disorders are not immune from being at the center of a legal issue, such as dementia, epilepsy and so on. Well known in the still debatable issue on epilepsy being a disease of mind or not. Thus, neurologists at court should carefully avoid psychiatric overlapping of opinions and remain within the limits of their specialty, while considering a multifaceted issue.

Keywords: neurological disorders, courts of law, litigation, forensic sciences

1. Introduction

Courts of law will routinely summon medical professionals in their role as experts for diverse issues, such as:

a) Malpractice claims
b) Compensation following health problems caused by an accident
c) Mental capacity related to criminal and civil proceedings (insanity defense, ability to make a will, competence to stand trial, etc.)

Forensic doctors are familiar with the adversarial setting in a court of law and are frequently summoned. Psychiatrists also belong to this subgroup of medical professionals. Among doctors of other specialties, Albanian courts will generally request an expert opinion regarding claims of medical negligence or errors in treatment. Neurologists are widely spared from this involvement. Even in cases of clear neurological diagnoses, such as epilepsy or dementia, the focus is on psychiatric

complications, and psychiatrists are the most common experts summoned.

This can be due to several factors, such as:

1) Behavioral changes, which are important to a forensic evaluation, are considered the main presentation of psychiatric disorders. Neurological disorders differ in that behavioral changes, when present, are belated or disguised or are otherwise complications of the main diagnosis.
2) Loss of physiological function gains a certain importance when related to a traumatic, external event. Schizophrenia — the hallmark of psychiatric diseases — seems to be unrelated to such events, at least not in a straightforward manner. Brain trauma is clearly the opposite.

While the main reason for requesting neurological expertise remains traumatology, other situations cannot be oversimplified.

2. Neurotrauma: A Clinical Approach

Forensic physicians dealing with neurological patients mostly restrict their scope of coverage to within the field of neurotrauma (Latif H, Ahmad S & Akmal M., 2020; Evans RW & Strutt AM., 2020).

In their treatise on forensic medicine, Dettmeyer et al. consider diverse grades of severity, and the discussion on forensic neurotraumatology focuses on brain trauma (Dettmeyer RB, Verhoff MA & Schütz HF., 2013). A three-grade classification of the level of injury is widely accepted: Grade 1, concussion; Grade 2, contusion; and Grade 3, cerebral compression. This grading system has strong clinical fundamentals and a valid prognostic value (Dettmeyer RB, Verhoff MA & Schütz HF., 2013).

To a lesser extent, spinal cord lesions are also included in the forensic scope (Escario JA, Sebastián CS, Vizán AA, Quiñones JV, Consolini F & Calvo RA., 2017). Before the advent of sophisticated neuroimaging techniques, such as magnetic resonance imaging, it was difficult to demonstrate the anatomic substance of injuries (McLH A., 1883). Table 1 includes five of the most commonly used acronyms that explain the adversities and diagnostic challenges facing a spinal cord injury without any radiological correlation (Pang D & Wilberger JE Jr, 1982; Pang D & Pollack IF, 1989; Faro SH, Saksena S, Krisa L, Middleton DM, Alizadeh M, Finsterbusch J, Flanders AE, Talekar K, Mulcahey MJ & Mohamed FB, 2022).

Table 1. Spinal cord injuries (SCIs) without any radiological correlation

SCIWORA	Spinal cord injury without radiographic abnormality
SCIWORET	Spinal cord injury without radiographical evidence of trauma
SCIWNA	Spinal cord injury without neuroimaging abnormality
SCIWOCTET	Spinal cord injury without computed tomography (CT) evidence of trauma
SCIWOMR	Spinal cord injury without MRI findings

While discussing SCIWORA, spinal cord injury without radiographic abnormality, the authors describe four causal mechanisms:

a. Flexion,

b. Hyperextension,

c. Longitudinal distraction,

d. Ischemia (Pang D & Wilberger JE Jr, 1982).

The same author and his collaborators in 1982 coined the acronym SCIWORET for spinal cord injury without radiographic evidence of trauma (Pang D & Pollack IF, 1989).

Notably, these syndromes were initially described in pediatric patients, in whom the mobility and elasticity of the vertebral column is higher. This might explain SCIs without any radiological change of importance. Sources have gone into more detail, using other acronyms such as SCIWOMR. However, these classes largely fall under SCIWORA (Faro SH, Saksena S, Krisa L, Middleton DM, Alizadeh M, Finsterbusch J, Flanders AE, Talekar K, Mulcahey MJ & Mohamed FB, 2022).

Another important issue that is somewhat neglected is peripheral nervous system injuries. Detailed tables with percentages of invalidity values are available, but mathematics will lead to confusion if applied at face value. For example, paralysis of both sciatic nerves will account for 80% (40% for each nerve) of invalidity; in polytrauma patients, summing up deficits in this form sometimes exceeds 100% (Roversi AS, 1987).

3. Neurological Opinion: Rare Cases Are More Frequent than Thought

Nontraumatic neurological disorders are a rarity in legal fora discussions. As the core of the problem is focused on the question of whether the condition is a disease of the mind, some diagnoses have been questioned.

Epilepsy is characteristic of the dilemma of whether it is a disease of the mind (Brahams D., 1990). In fact, patients suffering from this condition might be completely lucid and competent while free from seizures, with or without treatment.

If a patient suffering from epilepsy is involved in a felony or crime, most courts raise the question: why now? Is it possible for a man having a seizure or seizure-like activity to perpetrate a killing? How much are public opinion and awareness influenced by notions such as epileptic personality and the entire stigma associated with the disease (Gyimesi J., 2022)?

Expanded across two medical specialties, *dementia* is another condition with too many forensic implications. A neurological disease with clear organic and anatomic changes, dementia and a large family of other neurodegenerative disorders will develop psychosis at some point in their natural course. Should these cases still fall into the scope of a forensic psychiatrist? Can neurologists have their say when a dementia patient becomes part of judicial proceedings? Inability to make a will, testamentary freedom, consent to medical treatment and advance directives are some key issues when dealing with a patient suffering from dementia (Vyshka G & Kruja J., 2017).

Cases that are much more complicated are those where a *loss of consciousness* is the main factor in a clinical picture. People with a criminal background can later develop a neurological condition and become comatose due to factors unrelated to their misdeeds. Obviously, they are unable to testify, and medicolegal experts will verify whether their unconsciousness is permanent. Furthermore, patients waking up from a prolonged coma will suffer loss of memory (Tysse JE & Hafemeister TL, 2006). Their competence to stand trial — independent of the severity of the charges — is a subject of neurological and forensic evaluation.

Other subtleties that need consideration are pure neurological disorders (such as multiple sclerosis) and peripheral nervous system injuries. In the case of neuroinflammation and chronic diseases, it is common for patients to develop psychotic symptoms or a frontal syndrome. Even glucocorticoid therapy, which is often used in such a setting, might lead to steroid psychosis (Kostić VS & Lević Z., 1989).

Often, peripheral nerves become part of an evaluation for possible invalidity and permanent injuries following bodily trauma. In this case, simply summarizing percentages for separate (eventually multiple) deficits might be misleading. In fact, isolated deficits are not isolated in regard to somatic functionality and exhibit related long-term consequences. Authors have often approached legal issues related to this situation (Kessler HH., 1948).

4. Neurologists as Experts: Deontology and Limits

Exhaustive reviews and authoritative sources are available in the issue. In fact, although the main focus of forensics in regard to mental health remains within psychiatry, the spectrum of disorders exceeds a single specialty. Once a single specialty, over decades, neurology has gradually distanced itself from psychiatry. This approach has had obvious advantages but also some drawbacks.

When neurological expertise is needed, a 'battle of experts' is a common occurrence. Plaintiffs and defendants will have their own team of experts, and the adversarial system within a court of law is completely contrary to the medical and therapeutic alliance that physicians have in their profession (Beresford HR., 1992). Trying to explain very complicated neurological injuries and causative mechanisms in lay terms is risky and close to 'junk science', which an expert will strive to avoid (Klee CH & Friedman HJ., 2001).

Despite contradictory opinions, medical doctors cannot avoid their deontological duty and sometimes must act as a witness, attorney or expert. Legal medicine has largely absorbed the key issues of neuropsychiatric patients faced by judicial proceedings and courts. However, while forensic psychiatry is much more familiar with this setting, in some cases, neurological expertise can be needed. The era of advanced imaging has produced more confusion than clarity, since direct links between radiological findings and behavioral changes are difficult to prove (Baskin JH, Edersheim JG & Price BH., 2007).

Furthermore, law and medicine speak different languages (Cheshire WP & Hutchins JC., 2014).

5. Conclusions

Neurological expertise is of value to courts of law and during judicial proceedings, when it comes to a diversity of medical conditions. With a never completed divorce between neurology and psychiatry, however, neurologists in the role of an expert should take care of not operating on psychiatric constructs. Injuries and deficits need consideration, while facing the patient as a whole. Experts should not merely operate on percentages of lost functionality, but measure the quality of life and social functioning as well, among other.

What courts expect from a medical expert sometimes exceeds the most scientific and illuminating opinion, which might be inconclusive in itself.

> *Can brain scans be used to determine whether a person is inclined toward criminality or violent behavior?*
>
> *You will rule on that.*
>
> *Then-Senator Joe Biden*
>
> *Supreme Court nomination hearing of John Roberts* (Concannon D., 2018)

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