Everything you always wanted to know about the neurology report…

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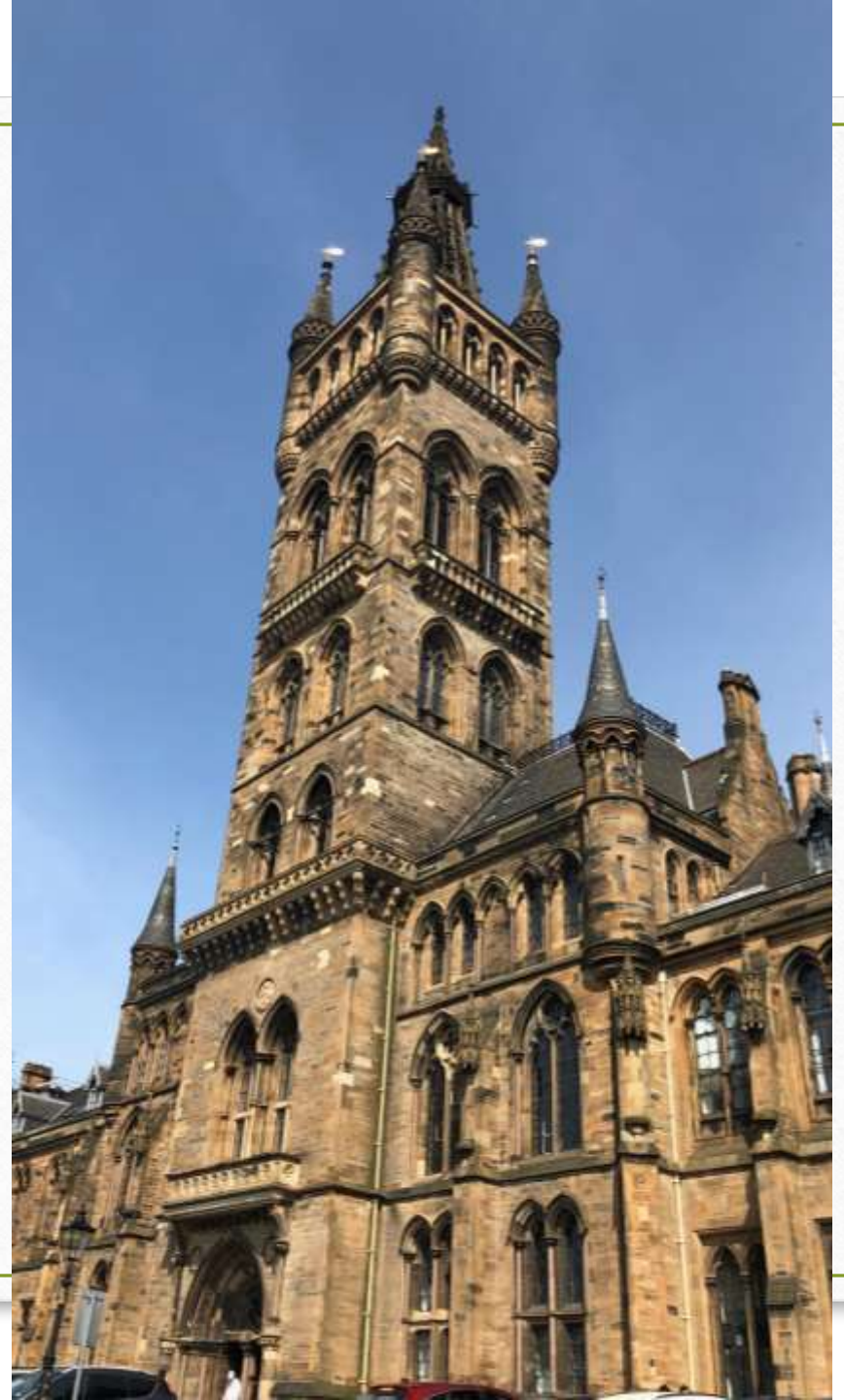
Disclosures

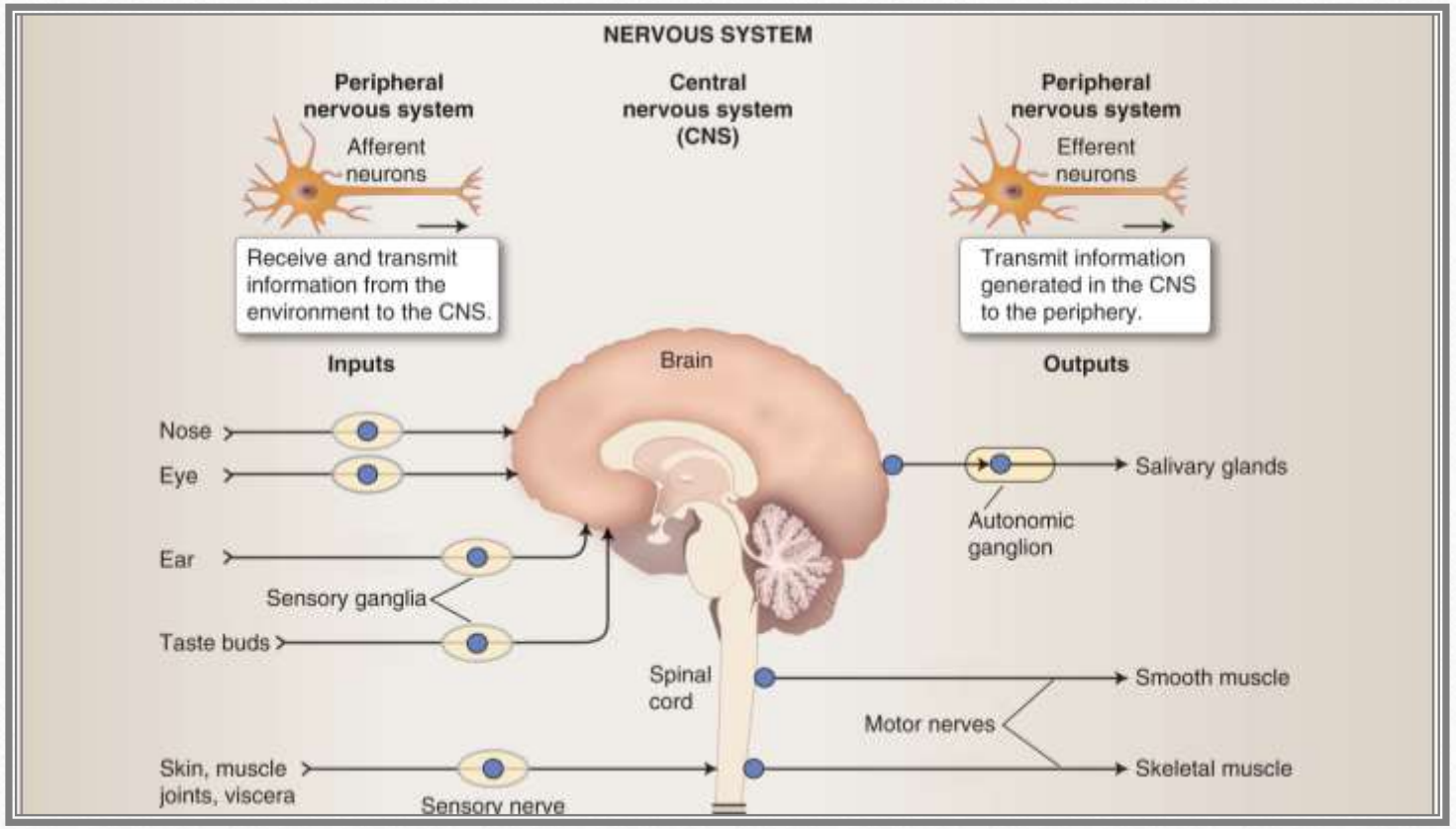
In the past 3 years, I have received travel bursaries or speaker's fees from:

- Abbvie, Abbott, Bial, Ipsen, Medtronic, & Merz




NHS
Greater Glasgow and Clyde
Welcome
to the
Institute
of
Neurological
Sciences

What is neurology?



Common neurological symptoms

Headache	'Attacks' of altered consciousness	Cognitive / memory difficulties	Co-ordination difficulties	Gait disturbance or imbalance	Movement problems
Tremor	Visual loss or change	Sensory disturbance	Weakness	Dizziness	Problems swallowing or speaking

Common neurological disorders

Migraine	Alzheimer's disease	Stroke	Epilepsy	Multiple sclerosis	Parkinson's disease
Motor neurone disease	Head injury	Ataxia	Peripheral neuropathies	Muscle disorders	Functional neurological disorder
Infection - meningitis and encephalitis	Spinal cord injury	Guillain-Barré syndrome	Myasthenia gravis	Sleep disorders	

Localisation

* Use courtesy of martin.turner@clneuro.ox.ac.uk
Base image © ‘MND: A family affair’ by David Oliver

Brain (stroke, MS, tumour)

-incl. basal ganglia (PD)

Brain-stem (stroke, MS)

Cerebellum (alcohol, MS, stroke)

Spinal cord (MS, tumour)

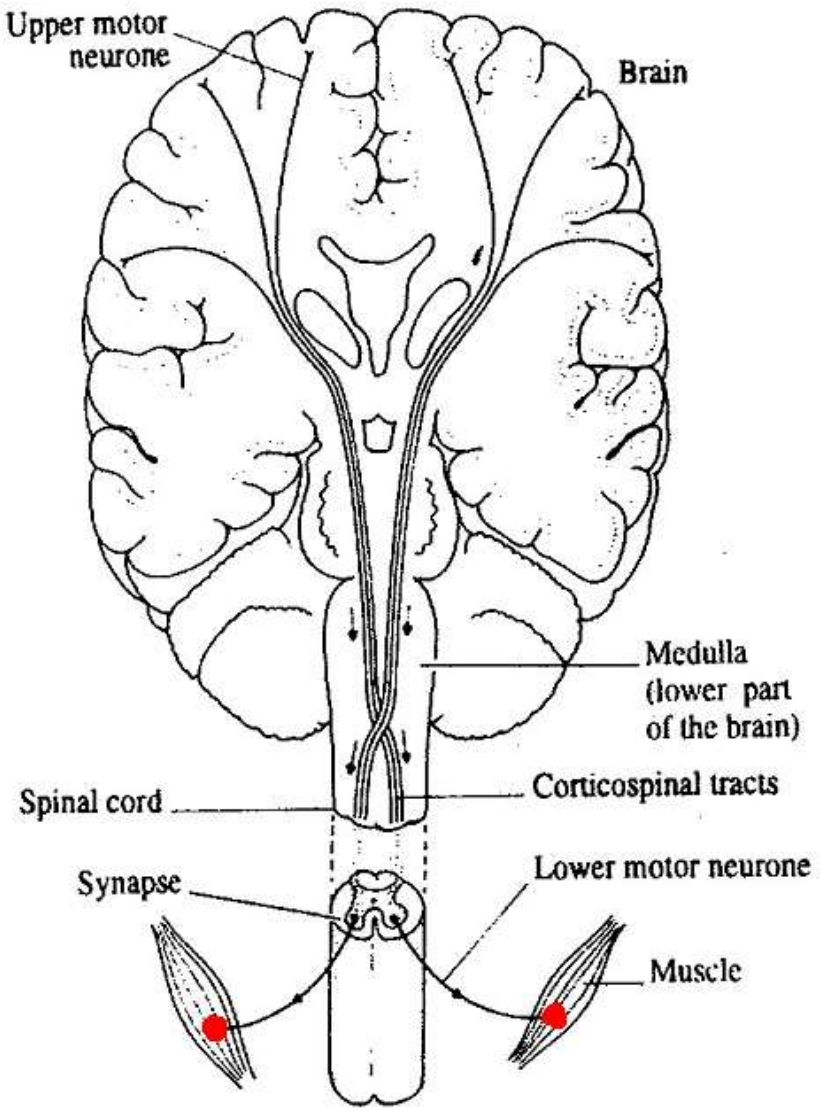
Anterior horn (MND)

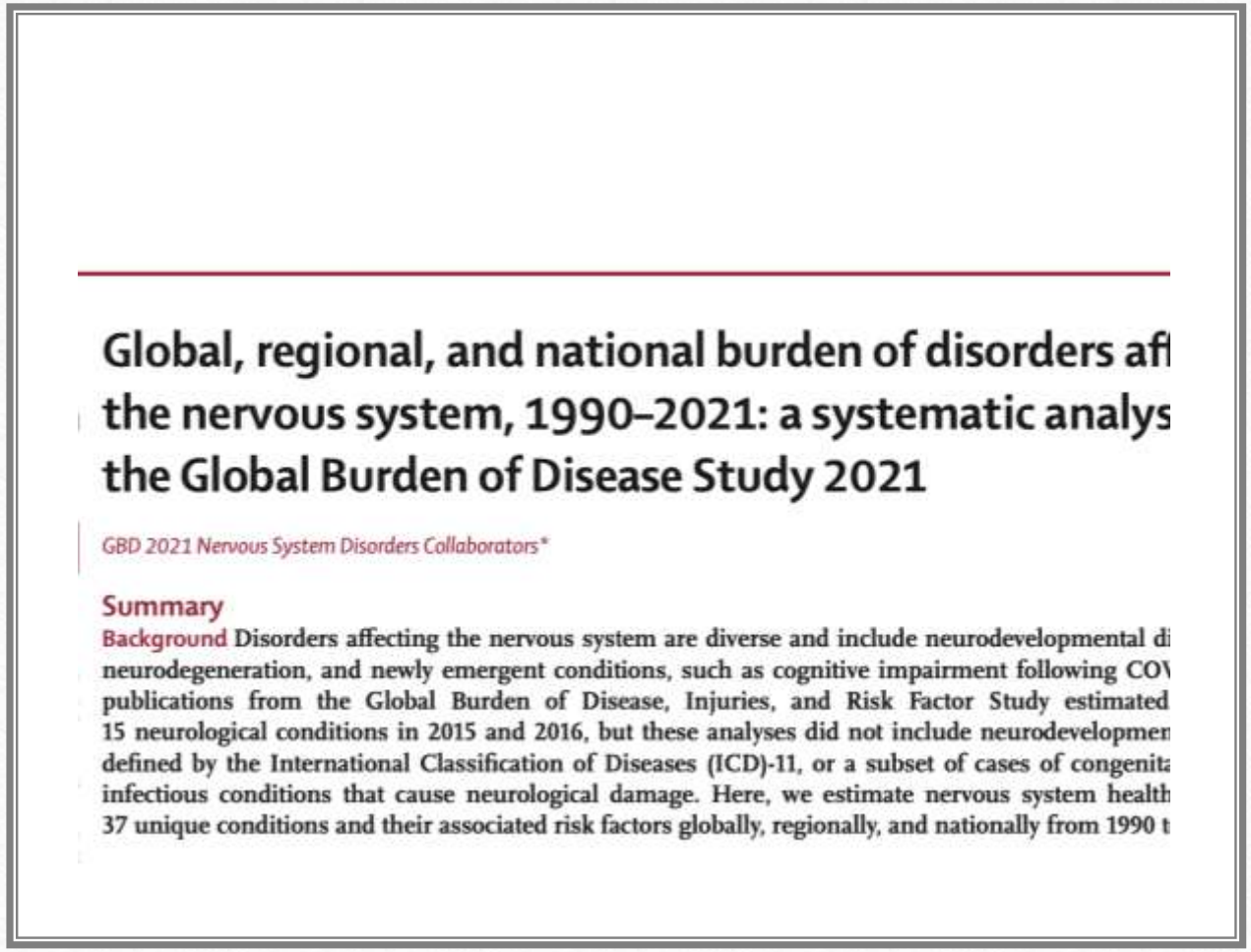
Peripheral nerve (diabetes, alcohol, GBS, vasculitis)

Neuromuscular junction (MG)

Muscle (dystrophy, myositis)

- NB muscle wasting think nerve first





Global, regional, and national burden of disorders aff
the nervous system, 1990–2021: a systematic analys
the Global Burden of Disease Study 2021

GBD 2021 Nervous System Disorders Collaborators*

Summary

Background Disorders affecting the nervous system are diverse and include neurodevelopmental di
neurodegeneration, and newly emergent conditions, such as cognitive impairment following COV
publications from the Global Burden of Disease, Injuries, and Risk Factor Study estimated
15 neurological conditions in 2015 and 2016, but these analyses did not include neurodevelopmen
defined by the International Classification of Diseases (ICD)-11, or a subset of cases of congenita
infectious conditions that cause neurological damage. Here, we estimate nervous system health
37 unique conditions and their associated risk factors globally, regionally, and nationally from 1990 t

The 10 neurological conditions with the highest age-standardised disability life years (DALYs) were:

- stroke
- neonatal encephalopathy
- migraine
- Alzheimer's disease and other dementias
- diabetic neuropathy
- meningitis
- epilepsy
- neurological complications due to preterm birth
- autism spectrum disorder
- nervous system cancer

UK neurology training

- Undergraduate (5yrs)
- Post-graduate
  - Foundation Years (2yrs)
  - Internal medicine training (3yrs)
  - +/- period of research (2-3yrs)
  - Specialist training (5yrs)
  - +/ - subspecialty fellowship (1yr)

My training and research

JHO at Western Infirmary / GRI

2yr SHO rotation Western Infirmary / Gartnavel General

SHO III Neurology (Southern General Hospital)

2yr period of research in Parkinson's disease for MD

5-year Clinical Lecturer in neurology (University of Glasgow)

Subspecialty interest – movement disorders (secondment to NHNN)

My job

Clinical

- Largely outpatient-based
- Based at Queen Elizabeth University Hospital
- Clinical Lead for National DBS service
- General neurology at GRI
- Movement disorder clinic
- Lead for dystonia service

Non-clinical

- Undergraduate teaching at University of Glasgow - Subdean 2013 – 2023; external examiner at Kings College Medical School
- Undergraduate - Clinical Neurosciences (BScMedSci), Nursing (BSc), & SALP (BSc)
- Postgraduate – Neuropsychology (MSc) & Clinical Pharmacology (MSc); clinical / educational supervisor for neurology trainees
- Subeditor for ACNR and Neurology & Therapeutics journals
- Neurology expert for Scottish Public Services Ombudsman (SPSO)
- Education Committee of Association of British Neurologists
- Commercial and non-commercial research studies

Neurological Scottish neologisms

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In 1983, Douglas Adams and John Lloyd published *The Meaning of Liff*,[1] a magnificent and hugely successful humourous book in which hundreds of common experiences, emotions, objects and situations were assigned UK place names (figure 1). Some of our personal favourites include the following:

- Berriwillock (noun (n.)): an unknown workmate who writes 'All the best' on your leaving card.
- Sheppy (n.): measure of distance (equal to approximately seven-eighths of a mile), defined as the closest distance at which sheep remain picturesque.

Scottish neurovocabulary

- Menzies (n.): The general practitioner who disagrees with the functional neurological disorder diagnosis because he 'knows the family very well'.
- Dufftown (v.): Listening to the patient's relatives telling you all about their own illness.
- Kilspindie (adjective): The attire of a medical student on the ward that is too casual, but not casual enough for you to mention it.

Medicolegal work

- Started in 2013
- Approached by Resolve Medicolegal in 2014
- Bond Solon and EWI training
- 40-50 reports per year
- 80-90% pursuer

When to instruct a neurologist…

- Most commonly, instruction of report follows neurological symptoms experienced after index event
  - Either new symptoms or worsening of pre-existing disorder
  - Most frequent instruction is head injury following road traffic accident
  - Most common neurological symptoms are headache / concussion
- When should a neurosurgical report be instructed?

Preparation for the report

(Contact from solicitor before the instruction letter…)

- The instruction letter
  - What is being asked?
- Review of materials
  - Other expert reports (neurology usually not the first)
  - Precognition of the client
  - Hospital, GP, & SAS records

    Are these symptoms new?

    Is there any other relevant past medical history

    Is the client's history consistent with records?

    Frequency of attendance before and after accident
- List of questions before the assessment

Assessment of client & opinion

- Detailed history & neurological examination over 60-90 minutes
- Dictate assessment notes in front of client
- Report completed within 1 week
- Pursuer or defender
- (Medical negligence)

- Opinion…
  - What is the neurological diagnosis?
  - Is this diagnosis consistent with mechanism of action?

Recommendations & prognosis

Further investigations (eg. MRI scans or nerve conduction studies) if support for clinical diagnosis required or diagnosis unclear
Further expert reports or repeat assessments (eg. Psychiatry, neuropsychology, ENT)
Treatment recommendations (eg. medications, neurophysiotherapy, clinical psychology)
Prognosis can be challenging
Setting a time-limit on attributable symptoms

Audit of last 103 cases

Last 103 reports

- 50 male, 53 female
- Mean age: 45.5y
- Injury type
  - Head injury - 70
  - Limb / soft tissue injury - 22
- Circumstances
  - RTA - 67
  - Accident at work - 25
  - Hospital - 5
  - Electrical / chemical injury - 4

Most common diagnoses

- Concussion - 35
- Headache - 29
- Functional neurological disorder - 24
- Peripheral nerve injury - 11
- Moderate or severe traumatic brain injury - 6

Concussion and FND

Assessing severity of head injuries

The Mayo scale of traumatic brain injury (TBI)

- Definite Moderate-Severe TBI requires one of:
  - Death due to TBI;
  - Loss of consciousness >30mins;
  - Post-traumatic amnesia (PTA) >24hrs ;
  - Glasgow Coma Scale <13 in the first 24hrs ; or
  - Evidence of haematoma, contusion, penetrating TBI, or brainstem injury.
- Probable Mild TBI requires one of:
  - Loss of consciousness <30mins and PTA <24hrs; or
  - Depressed, basilar, or linear skull fracture (dura intact).
- Possible TBI is made if one (or more) of following symptoms present:
  - Blurred vision, confusion, dazed, dizziness, focal neurological symptoms, headache or nausea.

What is concussion?

Characteristic symptoms experienced following a mild TBI:

- Disorientation
- Amnesia (retrograde / anterograde)
- Poor attention / concentration
- Headache
- Dizziness (eg. poor balance, vertigo)
- Nausea & vomiting
- Sensitivity to light and sound
- Mood or behavioural - irritability / emotional lability

Overlaps with other disorders

What is FND?

DSM-V: Functional neurological disorder is characterised by neurological symptoms, which involve abnormal nervous system functioning rather than structural disease

FND symptoms are involuntary and experienced as real

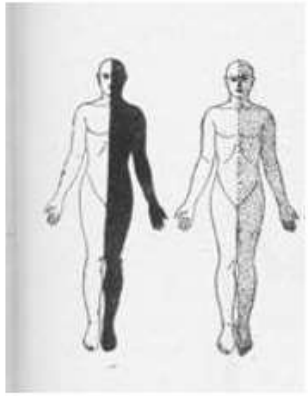
Medical culture wars – diagnostic stigma

Clinical presentation

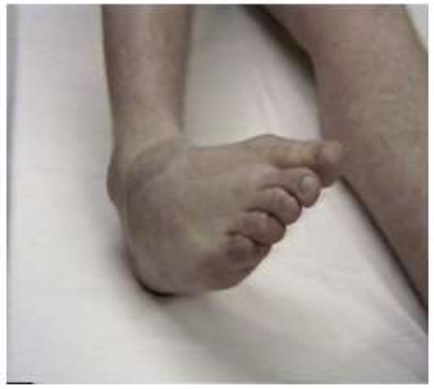
FND can cause almost any neurological symptom:

- Non-epileptic seizures
- Weakness / paralysis
- Involuntary movements (eg. tremor, dystonia)
- Sensory disturbance (eg. sensory, visual, vestibular)
- Speech disturbance
- Gait disturbance
- Cognitive difficulties

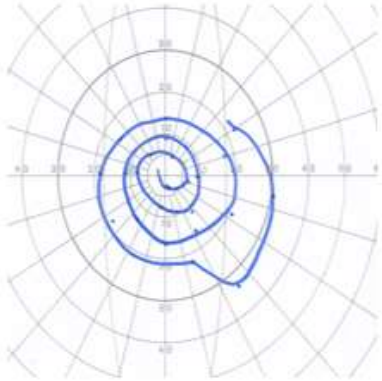
Functional Limb Weakness



Functional Sensory Disturbance



Functional Movement Disorders



Functional Visual symptoms

Functional Seizures

Functional Cognitive Disorder

Functional Dizziness (Persistent Postural Perceptual Dizziness)

Predisposing, precipitating, & perpetuating factors for FND

- Meta-analysis of 34 studies (n>1400) found stressful life events (eg. emotional neglect, sexual or physical abuse) more common in FND population[1]
- Risk Factors - Previous / co-existent functional disorders (eg. irritable bowel, fibromyalgia)
- Common associated symptoms - fatigue, pain, health anxiety, sleep disturbance
- FND symptoms can be perpetuated by:
  - Not receiving a clear diagnosis
  - Excessive and repeat investigations
  - Life stressors
  - Medicolegal claims

1. L Ludwig et al. Stressful life events and maltreatment in conversion (functional neurological) disorder: systematic review and meta-analysis of case-control studies. *Lancet Psychiatry*. 2018;5(4):307

	FND	Other
N	24	79
Male	10 (42%)	40 (50.6%)
Female	14 (58%)	39 (49.4%)
Mean age (SD)	42.9y (10.7y)	46.2y (14.7y)
Injury type		
Head injury	8 (33%)	62 (78.4%)
Limb / soft tissue injury	10 (42%)	12 (15.2%)
Electrical injury	3 (12.5%)	0
Circumstances		
RTA	7 (29.2%)	60 (75.9%)
Work	14 (48%)	11 (13.9%)

FND Vs Non-FND

Common solicitor questions

- When should I instruct a neurosurgeon rather than a neurologist?
- What about pain? Is that a neurological symptom?
- Why has my client got headaches and cognitive difficulties 4 years after the accident?
- What is functional neurological disorder?

“I am not a neurosurgeon…”

Questions?

Scottish medicolegal-vocabulary

- Millness (n.): client who forgets that they attended the GP on multiple occasions with headaches, cognitive difficulties, dizziness, and fatigue in the 12 months prior to the index accident.
- Croick (n.): generic paragraph within an instruction letter that is copied from previous instructions despite having no relevance to the case.
- Stockbridge (n.): the higher cost of an expert report because that expert works in Edinburgh.