Testing the ‘seizure scaffold’: what can experimental simulation tell us about functional seizures?

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Background 1

- For over a century, it has been speculated that the features observed in functional disorders are, at least in part, dependent on individuals’ ideas of how the disorder might present (1)
- A compelling ‘integrative cognitive’ model of functional seizures depicts complex cognitive interactions which may lead to activation of a latent seizure ‘ scaffold’ shaped by previous experiences and perceptions(2)
- Previous studies have used experimental simulation to identify the ideas healthy subjects have about motor, sensory and cognitive symptoms (3,4)
- The aim of this study was to test the ideas healthy adults have about seizures by using experimental simulation. We hypothesised that simulated seizures would have similarities with functional seizures, supporting the idea of a common latent seizure scaffolds as an important determinant of semiology

Methods 2

1. Sixty healthy volunteers were video-recorded simulating an epileptic fit

2. A scoring sheet was created, containing a list of clinical features found to be helpful in differentiating between functional and epileptic seizures

3. Two neurologists and one junior doctor evaluated the videos against the scoring sheet. Consensus view was reached following a group discussion

Results 3

Clinical feature		Number of participants (%)	Functional seizure	Epileptic seizure
Type of event	hyperkinetic	50 (83%)	All occur	All occur
	hypokinetic	4 (7%)		
	staring	6 (10%)		
Body axis	normal	30 (50%)	All occur	Predominantly Rigid
	rigid	5 (8%)		
	floppy	25 (42%)		
Eyes	open	32 (53%)	Usually Closed	Usually Open
	closed	27 (45%)		
	fluttering	1 (2%)		
	rolled upwards	0		
Side-to-side head shaking	yes	23 (38%)	Common	Rare
	no	37 (62%)		
Purposeful interaction with environment to prevent injury	yes	44 (73%)	Common	Rare
	no	16 (27%)		
Hyperventilation	yes	0	Common	Rare
	no	60 (100%)		
Tearfulness	yes	0	Common	Rare
	no	60 (100%)		
Fall to ground	yes	27 (45%)	Common	Common
	no	33 (55%)		
Guttural cry	yes	0	Rare	Common
	no	60 (100%)		
Vocalisation	none	54 (90%)	Rare	Common*
	incomprehensible	6 (10%)		
	comprehensible	0		
Tremor	yes	42 (70%)	Common	Rare
	no	18 (30%)		
Clonic jerking	yes	10 (17%)	Rare	Common
	no	50 (83%)		

Conclusion 4

- Our results suggest simulated seizures resemble functional seizures more closely than epileptic seizures, but also show some important differences
- This insight supports the idea of a latent ‘seizure scaffold’, but also demonstrates that subjective experience, not captured by this experimental simulation, remains a core determinant of semiology

References

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