Reviewer's report

Title: An uncommon case of random fire-setting behavior associated with Todd paralysis

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Reviewer: anneliese alma pontius

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1. Minor issues not for publication:
Re Discussion: The phrase “guilty by reason of sanity” better reads as: he was found guilty, having been found to have no mental illness or defect. Further they might just briefly mention that their diagnosis had implied that their patient lacked the capacity to form mens rea [21] which “negated criminal responsibility”. (The verdict “guilty” does not necessarily negate their diagnosis.)

2. Major Compulsory Revisions:
a) The Conclusion would gain if the authors would detail their suggested “disconnection of frontal lobe structures” (which specifically? “as a possible pathogenic mechanism”,
b) It would be important to mention epilepsy and to specify what type of epilepsy, the authors seem to mean a nonconvulsive behavioral type.
c) further, it would help to elaborate on their finding that Todd paralysis had been pre-existing in their case, since their Discussion suggests “an association between an isolated, first-time arson offense and Todd’s paralysis after a seizure”. (Did the patient have other seizures too without offensive behavior, possibly with other bizarre non-criminal behavior?

3a. Further. Re. Discussion (see also lc) the authors might add an explanation what suggested to them the reference “temporal and frontal lobe dysfunction in violent offenders …more pronounced in the dominant hemisphere [16]”. So far they had mentioned “hypoperfused regions within the frontal cortex and basal ganglia”. It might also help to specify prefrontal cortex vs. motor cortex within this context,
b) Also re “Disconnection of the frontal lobe….. “ Here the authors list impairments of prefrontal lobe functions alone. It would help if they could here specify which ones of those functions are “disconnected”.

c) “We recommended continuing prophylactic treatment with antiepileptic medication to help prevent further hypoxic-ischemic insults.”. It would help if the authors could elaborate on their implication that suggests to the reviewer that a previous hypoxic-ischemic insult had occurred which had somehow been association with seizures.

(Actually the authors stated previously that antiepileptic medication had made the
patient symptom free, which would speak for a diagnosis of seizures).

4. Medical History 2.2. Mental status examination

a) It would much help if the authors would not only briefly cite AXIS I – V of DSM IV-TR but could add a more details. For example, what was the patient’s general motoric behavior, speech and affect? How did he experience his acts and feel after the fire setting? What did fire mean to him,, any memories of fires, etc?

b) Further, it would be helpful to briefly differentiate the use of the term “impulsive”, given that this term applies not only to the common use of it as contained in the diagnostic category of impulsivity disorders” which are associated with strong emotions and typically exist virtually life long behavior.

By contrast, the authors appear to imply “impulsive behavior” in the sense of non-intentional sudden behavior without emotional involvement(!) as is typical of any kind of seizure, which the authors apparently mean.

b ) It would be helpful if the authors could explain under AXIS III why they mention “history of Todd’s paralysis, which raises the possibility of a delirious state as a possible cause for the observed fire setting behavior [4].” This Ref. [4] re. hyperglycaemic delirium. Had the latter occurred in patient’s history? Or do the authors mean this reference as a background differential diagnosis?

c) The authors mention “observed fire-setting behavior”. This implies that there had been witnesses observing the fires-setting. It would be of great interest if there had been reports by such witnesses.

5. To Case Report 2.5 Neurological examination

a) It would help if the authors could clarify whether the patient had a seizure during a neurological examination

b) to 2.6 “Other diagnostic .procedures” (obviously not during the fire-setting)

The authors might specify whether they assigned any significance to the “ ictal discharge of repetitive spikes localized in the frontal, central and parietal regions Fig 2A) “.

In regard to the parietal region it might enhance their presentation within the context of their report that the patient had at times disturbance of consciousness) to mention the recent literature emphasizing the role of the parietal lobe in consciousness (Custers R & Aarts H. The unconscious will: How the pursuit of goals operates outside of conscious awareness. Science 2010. 329:47-50 and Haggard P. Human volition: towards a neuroscience of will. Nature Review/Neuroscience 2008,9:934-946.

6. Background

a) “Here we describe a case of…first-time arsonist who suffered Todd’s paralysis prior to the onset of a bizarre and random fire-setting behavior”. It would be helpful if the authors might be more specific in their expression, e.g. by stating that Dodd’s paralysis had been pre-existing in their case. - Not also 2c) re Discussion, where the authors suggested “an association between an isolated
first-time arson offence and Todd’s paralysis…after a seizure”. This needs clarification, probably within the context of the pre-existing Todd paralysis. Such a clarification also pertains to Summary.

b) To their list of previous studies of fire-setting cases the authors might choose to add the proposed partial epilepsy of ‘limbic psychotic trigger reaction” (LPTR). LPTR is two-fold consistent with established experimental knowledge: LPTR symptomatology is analogous to that elicited in primates by the neuro-physiological mechanism of seizure kindling. Further, LPTR is also “intriguingly similar” to seizures evoked by direct electrical stimulation of the mesotemporal basal brain region in pre-surgery patients (Wieser HG, 1983; 1993). LPTR’s so far 24 published cases include four fire-setters whose acts had been unplanned, non-intentional, and remembered afterwards (Pontius AA & Wieser HG. Can memories kindle nonconvulsive behavioral seizures in ‘limbic psychotic trigger’ reaction’? Epilepsy & Behavior 2004,5:775-783; Pontius AA Motiveless fire-setting implication partial seizure kindling by reviving memories of fires in ‘limbic psychotic trigger reaction’. Perceptual & Motor Skills 1999, 88::970-982)

7. Summary
The same advice pertains to summary as that mentioned under Background 6a and under Conclusion 2c).

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare to have no competing interests