



WORD FINDING DIFFICULTY AS A POST-POLIO SEQUELAE

(Rev. 2017: Abbreviated from the original)

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Cf. American Journal of Physical Medicine and Rehabilitation, 2000; 79:343-348.

Of all Post-Polio Sequelae, fatigue is the most commonly reported and most debilitating symptom. In the 1985 National Post-Polio Survey, 91% of respondents reported new or increased fatigue, 41% reported fatigue interfering with performing or completing their work and 25% reported fatigue interfering with self-care activities (1-5). Importantly, polio survivors differentiate between physical tiredness and what they describe as "brain fatigue" associated with thinking difficulties. In the 1990 National Post-Polio Survey, between 70% and 96% of respondents with fatigue reported difficulty with concentration, focusing attention, mind wandering, memory, thinking clearly and word-finding, with 77% percent reporting moderate to severe difficulty with these problems (6). Of these cognitive symptoms, word finding difficulty was least expected. Of all polio survivors surveyed, 79% reported difficulty "thinking of words I want to say," with 37% reporting frequent, moderate to severe word finding difficulty (6). Further, the frequency and severity of word finding difficulty were significantly correlated with all of the other subjective cognitive difficulties listed above.

We studied 33 polio survivors and administered the Post-Polio Fatigue Questionnaire, Animal Naming and FAS Tests, plus tests of attention and information processing speed. Plasma prolactin was also measured as a marker for brain dopamine secretion since, as prolactin increases in the brain, dopamine decreases:

- 1) Subjects reporting high fatigue severity and word finding difficulty had clinically abnormal or significantly lower Animal Naming Test scores as compared to subjects with low symptom severity;
- 2) Impaired performance on the most difficult tests of attention and information processing speed were also associated with lower scores on the word finding tests;
- 3) A significant inverse relationship between Animal Naming Test scores and plasma prolactin suggests that a reduction in brain dopamine secretion is related to reduced animal naming ability. These data support the hypothesis that decreased dopamine secretion, possibly secondary to poliovirus damage to the basal ganglia, may underlie not only fatigue and impaired attention but also word finding difficulty in polio survivors.

Clinically, polio survivors report a "tip-of-the-tongue" phenomenon characterized by difficulty naming familiar objects and people (sometimes even family members), difficulty that increases as fatigue worsens. This complaint is similar to that in Parkinson's disease patients, who also report "tip-of-the-tongue" word finding difficulty well as "excessive" and sometimes disabling fatigue (7-9). Parkinson's patients and polio survivors are similar in that both have damage to the basal ganglia and dopamine producing neurons (6,10-12).

In a previous study, we found that slowing of right hemisphere electroencephalographic (EEG) activity in polio survivors, an indicator of decreased cortical activation, was significantly positively correlated with both daily fatigue severity and plasma prolactin, which were themselves significantly positively correlated (13). The association between word finding difficulty, subjective and measured impairment of attention and cognitive difficulties with "brain fatigue" supports the hypothesis that symptoms of post-polio brain fatigue are related to a decrease in dopamine release, causing a decrease in brain activation, and are not symptoms dementia (6,12-15).

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