

SPIROCHETES INFECTION AND FRONTOTEMPORAL DEMENTIA: A POTENTIAL LINK TO PATHOGENESIS?



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INTRODUCTION

A potential link has been hypothesized between spirochetal infection and Alzheimer's Disease (AD). A potential slow-acting unconventional infectious agent acquired in youth becomes active after years leading to the pathogenetic cascade responsible of beta amyloid production. This issue has never been explored in other forms of degenerative dementia. By contrast it is acknowledged that neurosyphilis can cause slowly progressive dementia and there is mention in the literature of neurosyphilis presenting with the features of primary progressive non-fluent aphasia (NFPA). We decided to review clinical records of patients studied in our Centre for Cognitive Impairment and Dementias to explore the frequency of syphilis positive serology.

MATERIALS AND METHODS:

- 817 consecutive patients studied in our Centre from January 2011 and August 2015 during a day-hospital session were reviewed;
- all patients underwent routine blood exams including syphilis screening (VDRL and TPHA test), neuropsychological evaluation, electroencephalogram and carotid ultrasonography;
- all patients had available neuroimaging (CT or MR scan) and some of them cerebral PET/SPECT scan.

RESULTS (1):

- 9 patients of 817 showed positive syphilis serology (very low titres judged as expression of a remote infection); FTA-IgM test was negative in all cases.
- Clinically, 5 patients showed progressive memory loss (4 with AD, 1 with MCI); one patient was diagnosed as bvFTD; 3 patients presented with NFPA; all patients had a normal neurological examination.
- MR imaging in all patients revealed no signs of neurosyphilis.
- 5 patients agreed to undergo a lumbar puncture, which proved negative for syphilitic infection; patients who declined lumbar puncture had a one year follow-up: syphilis titres did not increase with time and patients did not develop other neurological signs in keeping with neurosyphilis.

Disease	N. of subjects	N. of subjects with positive syphilis screening	Percentage (/100) of subjects with positive screening	Syphilis test details in positive subjects			
				Index (<1)	FTA-ABS IgG	VDRL (Neg<1 :2)	TPHA (neg: <1:80)
AD	459	4	0.8	9.1 12.7* 0.38 7.9	neg + +++ neg	neg 1:8 1:16 neg	neg neg 1: 640 1:160
FTD	112	4	3.6	17* 18.48* 8.96* 11.6	+ + ++ +/-	neg neg neg neg	1:320 1:160 1:1250 1:160
CBD PSP	19	0	0	-	-	-	-
MCI	179	1	0.5	14.6	+	1:4	1:320
VD	28	0	0	-	-	-	-
LBD	15	0	0	-	-	-	-
Miscellaneous	5	0	0	-	-	-	-
Total	817	9	1.1				

TAB. 1. Results. *Patients which underwent lumbar puncture which turned out to be negative for Treponema Pallidum.

RESULTS (2):

- Statistical analysis was performed in the two dementia groups (AD and FTD) in which patients with positive syphilis serology were present. Fisher's Exact Test revealed a trend towards more frequent syphilitic infection in FTD ($p=0.49$).

DISCUSSION

The present retrospective data suggest a higher frequency of spirochetal infection in frontotemporal dementia compared to Alzheimer's Disease. Patients with NFPA seem to show a particularly high presence (23% of cases) when compared to other variants of the FTD. In view of the relatively small numbers we cannot exclude the possibility that this finding arose by chance. Nevertheless, the findings suggest that further study is merited.

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