Table 1: Characteristics of subjects evaluated for autoantibodies.

	CFS	Non-Fatigued
Atlanta Case Control		
Subjects (n = 56)	22	34
Female (n = 52)	19	33
Male (n = 4)	3	1
Age Group (yrs)		
18–29 (n = 9)	3	6
30–39 (n = 18)	7	11
40–49 (n = 23)	12	11
50–59 (n = 6)	0	6
Mean Age	39 years	38 years
Mean Age Onset	35 years	
Onset type		
Sudden	8	
Gradual	14	
Mean Illness Duration	69 months	
Number of Subjects Ill		
< 5 years	10	
>5 years	12	
Wichita Population		
Subjects (n = 94)	37	57
Female (n = 64)	31	33
Male (n = 30)	6	24
Age Group (yrs)		
18–29 (n = 14)	1	13
30–39 (n = 18)	8	10
40–49 (n = 26)	13	13
50–69 (n = 36)	15	21
Mean Age	46 years	42 years
Mean Age Onset	36 years	
Onset type		
Sudden	5	
Gradual	32	
Mean Illness Duration	128 months	
Number of Subjects Ill		
< 5 years	14	
>5 years	23	

subjects were stratified by sex, age, and CFS for all MAP2, NFT and ssDNA. The association of autoantibodes in CFS subjects was compared by grouping by sex, age, age at illness onset, and duration of illness. CFS subjects were stratified by sex, age (<40 years, 40–40 years, >50 years), onset type (gradual versus sudden) and duration of illness (<5 years, >5 years) to determine whether an association with autoantibodies existed.

Results

Although women predominated in both study groups other demographic and clinical characteristics differed and reflected basic differences between patients with CFS who obtain medical care and those in the general population (most of whom have not seen a physician) (Table 1). Of note, CFS cases from physician surveillance were somewhat younger than those identified in the population (mean 39 and 46 years, respectively) and controls were similarly different: those recruited in the physician study had been ill about half as long as those in the community (69 and 128 months, respectively) and were more likely to report sudden onset CFS (36.4%) than those in the general population with CFS (13.5%).

A few CFS subjects in the physician surveillance study aged 18–29 years had antibodies to ssDNA when compared to the same age non-fatigued control group. The mean value for the 3 CFS subjects was 2-fold greater then in the 6 non-fatigued controls ($p = 0.038$). Among CFS subjects, the 10 who reported being ill for ≤ 5 years had lower levels of autoantibodies to MAP2 (median value of 18, range 12 – 20) compared to the 12 CFS subjects who have been ill for >5 years (median value of 8, range 6 to 10) ($p = 0.025$). There were no other significant findings in the physician surveillance CFS subjects when stratified by sex or type of illness onset.

In the population-based study, there was a significant difference in the prevalence of autoantibodies to MAP2 between the 30 male subjects (20/30, 67% positive) and the 64 female subjects (19/64, 30% positive) ($p = 0.0006$). Among the non-fatigued control group, 9 of 33 women (27%) and 19 of 24 (79%) men were positive for antibodies to MAP2 ($p = 0.0004$). One male CFS subject (16%) was positive for MAP2 antibodies compared to 79% (19/24) male non-fatigued controls ($p = 0.04$). Among CFS subjects that were ≤ 40 years of age, there was a trend for lower MAP2 antibody levels for those that were ill for ≤ 5 years compared to those ill for >5 years ($p = 0.056$).

Discussion

CFS is a complex, debilitating illness, which is characterized by at least 6 months of severe persistent or relapsing fatigue and a group of characteristic but nonspecific symptoms. Despite more than a two decades of extensive research, no diagnostic tests exist, and effective control and prevention remain elusive because the cause and pathophysiology of CFS remain unknown. CFS is clinically similar to several rheumatic autoimmune disorders that can be diagnosed and characterized by autoantibody profiles. For this reason, we conducted an exhaustive evaluation of 11 ubiquitous nuclear and cellular autoantigens in addition to two neuronal specific antigens.

The serum samples tested in this study were collected from a physician surveillance study conducted in Atlanta [15] and a population-based community study in Wichita [8]. The physician surveillance study was conducted over