had more cases of mild cognitive impairment than the comparison group.

Importantly, we also observed an inverse correlation between amyloid beta 42 levels and HAM-D scores, in both the whole sample (r=-0.415, p=0.004) and in the major depression group only (r=-0.390, p=0.04), indicating that lower levels of amyloid beta 42 were associated with greater symptom severity. Fifteen individuals with major depression were receiving antidepressant treatment at the time of testing, but no differences in amyloid beta 42 levels were observed within the major depression group as a function of antidepressant treatment (no antidepressants: mean=211.5 [SD=94.3]; antidepressants: mean=236.1 [SD=149.1]).

After removing three significant outliers, we observed that F2 isoprostane levels differed significantly across conditions (t=3.818, df=38, p=0.001), with much higher levels seen in the major depression group (N=27) than in the comparison group (N=13) (Figure 1). These differences suggest that increased oxidative stress is associated with depression. Additionally, similar to previous reports in the literature, we observed that levels of amyloid beta 42 inversely correlated with F2-isoprostane levels (r=-0.331, p=0.04) when both individuals with major depression and comparison subjects were considered. This correlation was not significant when considering depressed individuals only, although this may be a consequence of lower statistical power.

Discussion

Our results confirm that elderly, cognitively intact individuals with major depressive disorder have reductions in CSF levels of amyloid beta 42 similar to individuals with Alzheimer’s disease or mild cognitive impairment. This pattern is typically thought to reflect increased deposition of amyloid beta in the brain, consistent with PET results from studies using Pittsburgh compound B and [18F]FDDNP (26–28). These reductions in amyloid beta 42 levels do not appear to be associated with gender (24, 25). Moreover, unlike in individuals with Alzheimer’s disease and mild cognitive impairment, differences in CSF tau protein levels were not observed in individuals with major depression in our study. However, the development of tau pathology in

FIGURE 1. Levels of Amyloid Beta 42 and F2-Isoprostanes in CSF in Cognitively Intact Elderly Individuals With Major Depressive Disorder and Age-Matched Nondepressed Comparison Subjects

a Between-group differences reached statistical significance for amyloid beta levels (p=0.02; Cohens’ d=0.73) and isoprostane levels (p=0.001; Cohens d=0.89). Error bars represent standard errors of the mean.