Cerebrospinal fluid (CSF) biomarkers are now widely used for diagnosis of Alzheimer Disease (AD) in atypical clinical forms, for differential and early diagnosis. Among these biomarkers, different forms of amyloid peptides Aβ40, Aβ42 or Aβ38 produced by the cleavage of the amyloid precursor protein (APP) have a central role. APP processing by γ-secretase releases also an aminoterminal secreted fragment called sAPPβ while an alternative non-amyloidogenic cleavage of APP, through α-secretase, liberates another fragment called sAPPα. To decipher the molecular and pathological mechanisms leading to the production and the detection of these entities is essential for the comprehension of AD. In this report, we present the results of the multiplex measurement of CSF Aβ38, Aβ40, Aβ42, sAPPα and sAPPβ in 60 patients with dementia segregated between neurochemical dementia diagnostic (NDD) positive and negative groups. The NDD classification was based on our routine Tau, P-tau181 and Aβ42 cut off values. We confirmed previous findings regarding the correlation between sAPPα and sAPPβ, as well as the potential interest of these new biomarkers. We also studied the correlation between sAPPs and Aβ peptides, as well as between Aβ peptides themselves. We observed a strong correlation between sAPP and Aβ38 or 40. We also reported a strong correlation between Aβ38 and Aβ40, while Aβ42 was correlated to these fragments only in non pathological situations. Our results are important for the further use of these analytes for AD diagnosis, as well as, to validate cell biological hypotheses of APP processing and Aβ fragment production.