Article ID
sciforum-045857
Status
abstract accepted
Title
Sex-dependent hepatomegaly, and increased hepatic oxidative stress in old male and female 3xTg-AD mice as compared to mice with physiological aging.
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Abstract
When it comes to neurodegenerative disorders, Alzheimer's disease (AD) is one of the main causes of dementia in older people. Until now, studies have focused on the alterations that occur in the brain. However, it has been shown that in addition to the accumulation of beta-amyloid plaques and tau proteins, oxidative stress and inflammation also play a role in this disease's pathophysiology. Peripheral organs such as the liver, the main organ regulating metabolism and involved in supporting the immune system, could affect AD pathophysiological development and/or progress. We have previously described hepatic oxidative stress in 6-month-old 3xTg-AD mice, an age mimicking prodromal stages of AD-disease. In the present work, we studied the impact of AD-genotype and sex effects on liver dysfunction in 16-month-old males and females 3xTg-AD mice, an age mimicking neuropathological advanced stages of disease, and as compared to age- and sex-matched non-transgenic mice with physiological aging. The results of mass index showed hepatic damage as hepatomegaly in 3xTg-AD mice. Hepatic tissue oxidative stress, measured through antioxidant enzymes glutathione reductase (Gr) and glutathione peroxidase (Gpx), and antioxidant compound glutathione (GSH), was found increased in 3xTg-AD mice and differed according to sex. Furthermore, the correlations between the enzymes themselves and hepatic index also showed sex and genotype differences. These results indicate that liver status is affected in 3xTg-AD mice, it does in a sexually differential manner and could be favoring its progression. Further ongoing research would determine if these alterations correlate with a worse prognosis of the disease.
Keywords
Alzheimer's disease; aging; peripheral organs; liver; oxidative stress; sex differences