Laine-Le Noan M, Artaud F, Ozguler A, Pellicer M, Elbaz A, Canonico M

Association of hormonal exposure with walking function among French women: data from the CONSTANCES Study

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ABSTRACT

BACKGROUND - Ageing is characterized by a progressive decline in motor function associated with an increased risk of disability, institutionalization, and death. There is an important inter-individual heterogeneity of motor function in older subjects and the identification of its determinants may help define preventive measures. Biologically, estrogens are known to have neuroprotective effects and to be involved in maintenance of muscular mass and osteoporosis prevention. However, data of the association of estrogen exposure with walking speed (WS) are scarce. METHODS - Between 2012 and 2017, more than 200000 subjects between 18 and 69 were recruited from health centers in France and participant >45 yr underwent physical function tests among operational centers (N=33892 women). Information on hormonal exposure were self-reported using detailed questionnaires. After multiple imputation by chained equations procedures, linear mixed models with the center as a random effect were used to estimate the baseline association of WS with hormonal exposures, including characteristics of reproductive life and exogenous hormones. RESULTS - Mean WS was 175 cm/s. After adjusting for several confounders including sociodemographic and anthropometric characteristics and a mutual adjustment for the different hormonal exposures, the association of age with WS varied according to the menopausal status (b for 1 yr increase=-0.33; 95%CI: -0.53; -0.13 and b for 1 yr increase=-0.65; 95%CI: -0.71; -0.59, for pre and post menopausal women respectively, p for interaction< 0.01). In addition, WS significantly increased with increase in age at menarche (b for 1 yr increase=0.30; 95%CI: 0.13; 0.48), parity (b for 1 child among parous women=0.50, 95%CI: 0.15; 0.86), age at first birth (b for 1 yr increase=0.20; 95%CI: 0.14; 0.27) and duration of breastfeeding (b for 12 months vs less than 3 months=1.61; 95%CI: 0.31; 2.90). Finally, there was no interaction between type of menopause (natural vs artificial) and age at menopause (before and after 45 yr). Compared to women with natural menopause after 45 yr, WS decreased among women with artificial menopause after 45 yr (b=-1.12; 95%CI: -2.23; -0.01), with early natural menopause (b=-1.64; 95%CI: -2.75; -0.54) and with artificial and early menopause (b=-1.63; 95%CI: -3.05; -0.21). CONCLUSION - Our findings suggest that high levels of hormonal exposure may be associated with better WS and that time of exposure could have an important role.

KEYWORDS: -