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Original Article

Association of breastfeeding duration with dyslipidemia in women aged over 20 years: Korea National Health and Nutrition Examination Survey 2010–2014

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BACKGROUND: The prevalence of dyslipidemia, particularly hypercholesterolemia, has been reported to increase after pregnancy and menopause in Korea. This suggests the importance of the management of dyslipidemia in women for preventing cardiovascular diseases.

OBJECTIVE: This study aimed to examine the association of breastfeeding with 5 subtypes of dyslipidemia in Korean women aged over 20 years, by using the nationally representative Korea National Health and Nutrition Examination Survey 2010–2014.

METHODS: Ordinary least square regression and ordered logistic regression analyses were used to determine the association between breastfeeding duration and dyslipidemia.

RESULTS: The likelihood of having low-density lipoprotein cholesterol (LDL-C) disorder decreased by 16% in the group that breastfed for more than 24 months (odds ratio, 0.84; 95% confidence interval, 0.75–0.95) compared with the group that did not breastfeed. The likelihood of having non–high-density lipoprotein cholesterol (non-HDL-C) disorder was significantly reduced by 25% when the breastfeeding duration was more than 24 months (odds ratio, 0.75; 95% confidence interval, 0.64–0.87). The tendency toward developing disorders of total cholesterol (TC), LDL-C, and non-HDL-C decreased as the duration of breastfeeding increased, particularly among women aged 30–39 years.

CONCLUSION: Breastfeeding duration was negatively correlated with dyslipidemia in terms of TC, LDL-C, non-HDL-C, and triglycerides. Long-term breastfeeding was associated with the prevalence of dyslipidemia-TC, LDL-C, non-HDL-C, and TG disorders, in particular.

Introduction

Disorders of lipid and lipoprotein metabolism are collectively referred to as “dyslipidemias.” Dyslipidemias are clinically characterized by increased plasma levels of total cholesterol (TC), low-density lipoprotein cholesterol

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(LDL-C), non–high-density lipoprotein cholesterol (non-HDL-C), and triglycerides (TG), or decreased levels of HDL-C.[1] Dyslipidemia, particularly high cholesterol, is a major risk factor for cardiovascular disease (CVD) and stroke; thus, controlling LDL-C level was considered a primary target in the treatment of dyslipidemia.[2]

The prevalence of hypercholesterolemia (standardized for age ≥30 years) in Korea increased from 8.0% in 2005 to 15.0% in 2014. There is a sex difference in the prevalence pattern, given that the prevalence increased from 7.2% to 14.6% among men and from 8.4% to 16.7% among women in the same period. Hypercholesterolemia prevalence also shows an age difference, as it was higher among adults aged 30 to 39 years and 40 to 49 years for both sexes, whereas men had a higher prevalence than women among adults aged 50 years or older.[3]

Lipid profiles are affected by various factors related to lipid balance, such as hepatic disease, genetic characteristics, family history, and nutrition type.[1] Pregnancy and menopause are also known to affect lipid profiles. Changes in fat metabolism during pregnancy support the developing fetus and prepare the body for breastfeeding. Visceral (or intra-abdominal) fat is more metabolically active than fat deposited in other body areas and is linked to a more adverse cardiometabolic profile.[4] Menopause also increases the risk of dyslipidemia. After menopause, TC, LDL-C, and triacylglycerol concentrations tend to increase, whereas HDL-C concentration tends to decrease compared with before menopause.[5] Therefore, dyslipidemia before menopause can aggregate CVD risk factors at a younger age. The link of dyslipidemia with pregnancy and menopause implies that management of dyslipidemia in women is important for preventing CVD.

Previous studies have shown that breastfeeding improves lipid metabolism[5] and may prevent dyslipidemia and CVD.[6] Breastfeeding women tend to lose more weight in the postpartum period than women who do not breastfeed.[7] Studies have indicated that longer breastfeeding duration protects against maternal CVD[8,9] and was also associated with a lower prevalence of metabolic syndrome in a time-dependent manner.[10] Particularly, a study in Korea reported that lactation decreased the risk of hypertension, with the magnitude of the decrease being higher in the group with longer breastfeeding duration.[11] Another study in Korea showed that the longer the breastfeeding period, the lower the likelihood of developing metabolic syndrome.[12]

However, the association between breastfeeding and dyslipidemia according to the type of lipid profile has not been explored in previous studies. Each type of dyslipidemia has different implications for CVD or metabolic disease. LDL-C is a primary marker for treatment; however, non-HDL-C has recently been recommended as a primary marker. Apolipoprotein B, which is included in non–HDL-C, was also recommended as an optional secondary marker,[13] although total non–HDL-C level is preferred for cardiovascular assessment owing to its convenience of measurement.[1,13] Low HDL-C concentration was associated with the prevalence of CVD in an epidemiologic study.[14] Thus, the relationship of breastfeeding with dyslipidemia may vary according to the specific type of dyslipidemia. We aimed to fill the gap in the previous literature by investigating the effect of breastfeeding duration on lipid disorders according to lipid profiles and breastfeeding duration in Korean women.

Materials and methods

Study design and samples

Data for the present study were derived from the Korea National Health and Nutritional Examination Survey (KNHANES) 2010–2014. KNHANES is a nationwide, population-based, cross-sectional survey conducted by the Division of Chronic Disease Surveillance of the Korea Centers for Disease Control and Prevention to examine the health and nutritional status of the population. Trained interviewers collect all data by using structured questionnaires and obtain sociodemographic, health, lifestyle, and laboratory information, as well as female reproductive history.[3]

Data on 22,456 women among a total of 41,102 participants were collected during the study period. We included women aged over 20 years with available laboratory blood test results, leaving 13,919 respondents. There are controversies in the effect of oral contraceptives on dyslipidemia.[15] The presence of dyslipidemia can also inversely affect breastfeeding. For example, obese women failed to breastfeed or were not able to prolong breastfeeding because of dyslipidemia.[16] Thus, we further excluded women taking dyslipidemia medication (1160 women) and those taking oral contraceptives (1880 women). Information on the possibility of pregnancy at the time of interview or blood collection is not available in our data. The final sample consisted of 10,879 women (Fig. 1). All participants provided informed consent.

Variables

We used 5 lipid parameters (TC, LDL-C, HDL-C, non–HDL-C, and TG), the blood levels of which (in mg/dL) were classified into multiple categories according to the KNHANES and Korean guidelines.[17] TC was grouped into 3 levels: high (≥240), borderline (200–239), and acceptable (<200). LDL-C was divided into 5 groups: very high (≥190), high (160–189), borderline (130–159), acceptable (100–129), and proper (<100). HDL-C was divided into low (<40) and acceptable (≥40). Non–HDL-C was divided into 4 groups: high (≥190), borderline (160–189), acceptable (130–159), and proper (<130). TG was also grouped into 4 levels: very high (≥500), high (200–499), borderline (150–199), and acceptable (<150). All blood samples were drawn from the antecubital vein in the morning after fasting for at least 8 hours. Levels of TC, HDL-C, LDL-C, and TG