RESULTS

INTRODUCTION

Osteoporosis is commonly defined as a condition characterised by a decrease in bone mineral density (BMD, Kg/m²) and microarchitectural deterioration of bone tissue. It is a multifactorial chronic disease that may progress silently for decades until characteristic fractures occur late in life. Until now, different risk factors have been identified to osteoporosis such as age, female gender, smoking, alcohol consumption, inactive lifestyle, low calcium intake and several medical disorders as well as drugs. Furthermore, recent studies have suggested an association between contaminant environmental exposures, such as organochlorine (OCs, e.g. polychlorinated biphenyls (PCBs), chlorinated pesticides) and heavy metals, such as cadmium, and the incidence of osteoporosis. These persistent organic pollutants (POP)s are toxic to humans and find their way into the food chain, especially in fatty foods, also on land and in the sea.

The Inuit diet comprises large amounts of fatty tissues and they are exposed to OCs through the consumption of fat and cadmium through the consumption of organ meats and cigarette smoking, which is the dominant source of cadmium exposure. Moreover, their consumption rates of foods from aquatic food web is higher and it is estimated that the number of Inuit aged 65 years old and over will increase threefold by the year 2016, therefore, we consider these exposures a priority.

OBJECTIVE OF THE STUDY

Evaluate the prevalence of osteoporosis risk factors, the risk of osteoporotic fractures measured by ultrasound densitometry, the exposure to OCs and cadmium and the relationship between these contaminants and the parameters of ultrasound densitometry among 153 peri and menopausal Inuit women of Greenland.

METHODS

A detailed validated questionnaire, derived from the Mediterranean osteoporosis (MEDOS) study questionnaire, which gives information on the most important risk factors of osteoporosis such as usual socio-demographic data and lifestyle habits, was answered. Weight, height and waist, abdominal and hip girth were recorded using standardised techniques.

Blood and urinary samples were collected for evaluation of OC and cadmium concentrations, respectively PCBs (no. 28, 52, 99, 101, 105, 118, 128, 138, 153, 156, 170, 180, 183, 187) and eleven chlorinated pesticides (α-chlordane, γ-chlordane, p,p'-DDE, p,p'-DDT, aldrin, β-hexachlorocyclohexanes (β-HCH), heptachlor and α-heptachlor, oxychlordane, cis-nonachlor, and trans-nonachlor) were measured in plasma lipids. The total PCB (Aroclor 1260) concentration and the mono-arach (no. 105, 118, 156) substituted congeners were also calculated.

The risk of osteoporotic fractures was assessed using the Achilles ultrasound bone densitometry (Lunar Corporation, Madison, Wisconsin, USA) at the right calcaneus. The three ultrasound parameters measured were: broadband ultrasound attenuation (BUA, dB/m²), which reflects bone density as well as architecture; speed of sound (SOS, m/sec), which reflects bone density and stiffness index (SII, %), which reflects the rigidity of bone structure.

REFERENCES