A 62-year-old woman comes to the physician for a routine health maintenance examination. On questioning, she has had fatigue, constipation, and a 9-kg (20-lb) weight gain during the past year. She receives estrogen replacement therapy. Serum lipid studies were within the reference range 5 years ago. She is 157 cm (5 ft 2 in) tall and weighs 77 kg (170 lb); BMI is 31 kg/m². Physical examination shows no other abnormalities. Serum lipid studies today show:

- Total cholesterol: 269 mg/dL
- HDL-cholesterol: 48 mg/dL
- LDL-cholesterol: 185 mg/dL
- Triglycerides: 180 mg/dL

Which of the following is the most likely cause?

(A) Alcohol  
(B) Diabetes mellitus  
(C) Estrogen deficiency  
(D) Estrogen replacement therapy  
(E) Hypothyroidism  
(F) Thiazide diuretic therapy
## Learning Objectives

**The listener should be able to:**

1. Form a differential diagnosis for dyslipidemia in a post-menopausal woman.
2. Recognize the signs and symptoms of hypothyroidism.
3. Discuss the side effects of estrogen replacement therapy, especially in elderly population.
4. Explain the effects of diabetes mellitus on the lipid profile.
5. Describe the role of estrogen on an individual’s lipid profile.
6. Describe the effect of thiazide diuretic therapy on elderly patients’ lipid profile.

## Key Teaching Points

- Hypothyroidism is associated with metabolic syndrome, including hypertension, increased waist circumference, elevated serum triglyceride level, low HDL level, and insulin resistance.
- Alcohol consumption leads to hypertriglyceridemia by decreasing lipolysis and increasing triglyceride production.
- Diabetes mellitus reduces HDL and increases triglycerides
- Estrogen depletion reduces both HDL and triglycerides and may increase LDL
- Estrogen replacement therapy causes post-menopausal women to have transient but not sustained weight gain. Other risks of breast cancer include myocardial infarction, stroke, and venous thromboembolism. Thus, in a healthy postmenopausal women, risks outweigh the benefits.
- Elderly women commonly stop estrogen replacement therapy for hormone replacement therapy side-effects like breast swelling or tenderness, bloating, bleeding or spotting; dyslipidemia is not a common cause for stopping the therapy
- Thiazide diuretics seem to have minimal effects on lipid levels in patients, including the elderly

## Comments


McDermott MT. In the Clinic: Hypothyroidism. *December 2009, ITC6-3.*


Rosenson, RS. Secondary causes of dyslipidemia. In: UpToDate, Basow, DS (Ed), UpToDate, Waltham, MA, 2011.

