

## Premature Reflection of Type IIa Hyperlipoproteinemia in the Peripheral Arteries

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### Abstract

Hyperlipoproteinemia may lead to early development of atherosclerosis especially when present in familial forms. Serum low-density lipoprotein (LDL) cholesterol is known to be the most important form of atherosclerotic particules. Type IIa hyper-lipoproteinemia is one of the most important form of these familial disorders and gives rise to extremely elevated serum LDL cholesterol levels. Beside the cardiovascular mortality risk that the patient carries because of the early development of atherosclerotic lesions in all vascular tree, this clinical entity also manifests itself with accumulation of cholesterol particules on the skin. Herein we report a very early presentation of Type IIa hyperlipoproteinemia with both atherosclerotic lesions in the arteries and lipid deposits on the skin.

**Key words:** Type IIa hyperlipoproteinemia, atherosclerosis, reflection

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### Main text and Results

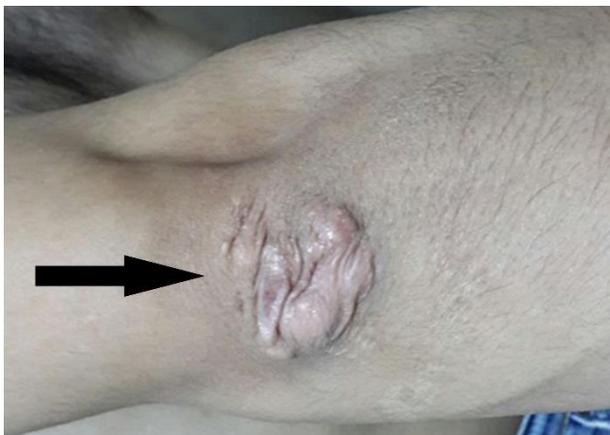
Hyperlipoproteinemia is a frequently seen disorder of lipid metabolism. It ensues from inability to metabolize the lipids, specifically cholesterol and triglycerides. There are several types of hyperlipoproteinemia. The type depends on the concentration of lipids and which are affected. Type II hyperlipoproteinemia is characterized by an abnormally high plasma  $\beta$ -lipoprotein concentration. It is commonly seen in the absence of any other lipoprotein abnormality. However elevated levels of plasma pre- $\beta$ -lipoprotein may sometimes accompany this clinical entity. Hence it is advised that the Type II hyper-lipoproteinemia should be subdivided into Type IIa (increased concentration of  $\beta$ -lipoprotein alone) and Type IIb (increased concentrations of  $\beta$ -and pre- $\beta$ -lipoprotein) (Beaumont JL et al, 1970). Type IIa hyper-lipoproteinemia is characterized by the increased levels of serum low-density lipoprotein

cholesterol (LDL-chol) levels. Absence of chylomicrons in plasma is prominent. Serum triglyceride levels are also normal. It leads to premature coronary artery disease as well as atherosclerosis of entire arterial network. The subjects are generally exposed to atherosclerotic burden in the early fourth decade (Singh and Bittner, 2015). Herein we report a 20 years old male presenting with atherosclerotic disease of both carotid and iliac arteries.

The patient was referred to cardiology polyclinic from primary care physician with swelling on the eyelids and extensor face of the elbow, which were likely to be xanthelasma (Figure 1, 2).



**Figure 1.** The arrow shows the xanthelasma on the eyelid.



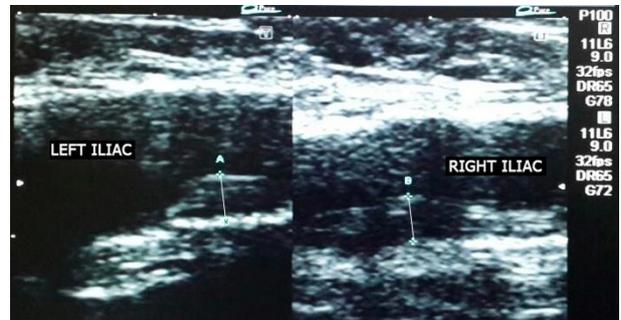
**Figure 2.** The xanthelasma on the extensor face of the elbow is shown by the arrow.

The patient underwent echocardiographic evaluation following a questionnaire about history of the past years, physical examination of cardiovascular system, sampling of blood and recording of a resting 12-lead electrocardiogram. All the findings were normal except serum lipid profile revealing a LDL-chol level of 447 mg/dl, high-density lipoprotein cholesterol level of 36 mg/dl and total cholesterol level of 499 mg/dl. Serum triglyceride level was normal as 81 mg/dl.

The lipid profile was consistent with familial type IIa hyper-lipoproteinemia. Doppler ultrasound evaluation revealed 50% and 40% stenosis in carotid and both iliac arteries respectively (Figure 3, 4).



**Figure 3.** The area represents atherosclerotic lesion in the carotid artery.



**Figure 4.** Atherosclerotic lesions in both iliac arteries.

### Conclusion

Lying behind the atherosclerotic process is a well-known feature of familial hyperlipoproteinemia. However, development of atherosclerotic lesions in the peripheral arteries at a so early age is worthy of reporting in terms of emphasizing the crucial role of hyperlipidemia in atherosclerosis, which is subject to speculations even in the scientific area.

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**Peer-review:** Externally peer-reviewed.

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