

Skin lesions in the form of eruptive xanthomasas – a first manifestation of severe hyperlipidaemia

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Abstract

The presence of eruptive xanthomas is associated with lipid disorders, particularly hypertriglyceridaemia. Intensified hypertriglyceridaemia >10 mmol/l (880 mg%) is a major risk factor for acute pancreatitis. The presented case concerns a 40-year-old man with skin lesions in the form of eruptive xanthomas, accompanied by hypertriglyceridaemia, complicated by acute pancreatitis, and diagnosed with type 2 diabetes with glycated haemoglobin 9.7 g/dl. Seeding of skin lesions appeared 2–3 months before hospitalization and was observed in the direction of molluscum contagiosum.

Key words

eruptive xanthomas, hypertriglyceridaemia, type 2 diabetes

INTRODUCTION

Metabolic disorders of lipids and carbohydrates constitute one of the most important problems in industrialized countries. The incidence of diabetes increases every year and it is estimated that it concerns more than 300 million people around the world, where half of the cases remain undiagnosed [1]. When taking Poland into consideration, diabetes afflicts more than two million people. Most of the cases are observed between the ages of 40–59 years, with more than 90% diagnosed as type 2 diabetes. Hypertriglyceridaemia is a concurrent metabolic abnormality to type 2 diabetes. High triglycerides, especially above 10 mmol/l (>880mg/dl) is a major risk factor for acute pancreatitis; however, it can also occur at a concentration of triglycerides > 5 mmol/l (>440mg/dl). About 10% of acute pancreatitis are caused by severe hypertriglyceridaemia [2].

Therefore, a special task for specialists and primary care physicians is the early detection of metabolic disorders, thus avoiding serious organ damage. Moreover, skin lesions in the form of eruptive xanthomas are relatively rarely the first manifestation of dyslipidemia. Formed within a few weeks, they are associated with hypertriglyceridemia, which may be accompanied by hyperglycaemia associated with newly diagnosed or uncontrolled type 2 diabetes. Additionally, in the diagnosis of dyslipidaemia a major role is played by a general practitioner or skin disease specialist, who encounters first the patients concerned with skin lesions. The presented study describes the case of a male patient whose first signs of metabolic disorders were eruptive xanthomas. After three

months of observation and treatment for local lesions in the patient, he developed symptoms of acute pancreatitis and type 2 diabetes.

CASE STUDY

40-year-old patient was admitted to the Department of Internal Medicine SPZOZ in Przeworsk, Poland, because of recurrent weeks of severe pain in the upper abdomen of the expander with radiation to the spine, deteriorating after meals. For several months the patient had increased thirst (drank about 3l of fluid per day), had polyuria and slightly increased sleepiness; however, these symptoms did not raise any suspicions in his mind. In addition, numerous follicular changes appeared on the skin of the patient; therefore, the case was primarily consulted dermatologically. Due to the suspicion of molluscum contagiosum, treatment included 5% potassium hydroxide solution. Nonetheless, after implementing topical treatment, there was no reduction in the amount of skin lesions. Generally, the patient did not smoke cigarettes or drink alcohol chronically, did not use drugs. Weight and height were, respectively, 85 kg and 170 cm, and BMI of 29.4 (85 kg /1.7 m²). However, the patient's father was treated due to type 2 diabetes and hyperlipidaemia, whereas his mother was diagnosed and treated for hypertension.

During the physical examination on the day the patient was admitted, lung auscultation revealed normal symmetrical vesicular sound, heart rate was regular and amounted to approx. 90/min, heart sounds were clean and loud. The abdomen was soft and painful when pressured in the epigastric center. Furthermore, the liver and spleen were not enlarged. He did not present himself with any pain in the mid-abdomen or the right lower quadrant. Peristalsis was audible. Additionally, the patient had peripheral edema.

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His tongue was dry with a white coating. Blood pressure on admission was 120/80 mmHg and temperature 36.4 °C. Symmetrically on the skin around the shoulders, arms, elbows, buttocks and knees, raised domes and follicular changes of light brown and yellow with a pink envelope, but without concurrent skin irritation (Fig. 1).



Figure 1. Eruptive xanthomas localised on skin of arm before treatment

On the admission, an urgent laboratory and imaging test were ordered. After centrifugation, serum had a milky form (Fig. 2). Total cholesterol concentration was 694 mg%; HDL cholesterol fractions – 45 mg%; triglycerides – 3,755 mg%. Serum amylase was normal – 28 mg/dl, and amylase activity in urine was significantly increased and reached 1,180 mg/dl. CRP levels were raised – 230 mg/l; blood glucose level was increased – 140 mg%. Full blood count, markers of liver, as well as kidney function were normal. Afterwards, an abdominal ultrasound test was performed, which was not diagnostic due to a large amount of intestinal gases. Chest X-ray and ECG were normal. On the basis of clinical imaging and further tests acute pancreatitis was diagnosed with a benign course; therefore, the patient was enrolled for conservative treatment. He was treated with painkillers, a fat-restricted diet and fluid therapy, which resulted in pain relief. Lipid therapy was also initiated, and fenofibrate incorporated at a dose 2×215 mg, together with simvastatine 1×40 mg. After four days of treatment, a reduction in the concentration of all fractions of cholesterol was achieved (total cholesterol 468 mg%, HDL 45 mg%, LDL 355 mg%, triglycerides 355 mg%).



Figure 2. Lipemic serum

The patient's daily glycaemic control glucose concentration was maintained in the range from 130 mg% fasting to 230 mg% after meals. Marked concentration of glycated haemoglobin was 9.7 g%. The patient was diagnosed with type 2 diabetes. After applying intensive insulin therapy with

daily needs of approx. 14u/day and a diabetic diet, a good alignment of glucose levels was achieved.

On the fifth day of hospitalization computed tomography was performed. The tomographic image of the head of the pancreas was enlarged, with an average of approx. 35 mm, characterized by blurry outlines, particularly with regard to the lower part and the uncinata process of the present in its vicinity – laterally and downwardly longitudinal – likely areas of inflammatory fluid along the width of the fascia layer to approx. 20 mm. Other abdominal organs did not exhibit any significant pathology in computed tomography imaging (Fig. 3).



Figure 3. Acute pancreatitis in the image of computed tomography. CT scan shows an enlarged dimension in the field of pancreatic head, body and tail. Pancreas shape is irregular

The patient was discharged home with instructions to take metformin at a dose of 3×500 mg/day, fenofibrate 215 mg/day, statins 80mg/day, and a formulation with omega 3 (2 g/day). In addition, the patient was educated in terms of a diabetic diet, and regular physical activity was recommended. The patient was referred to the Diabetes Clinic, Gastrointestinal Clinic and Metabolic Diseases Clinic, Institute of Food and Nutrition IŻiŻ in Warsaw. The treatments were followed by accomplishing glycaemic control and reduction of cholesterol and triglycerides. After a month of therapy with statin and fibrate, the concentrations of cholesterol and fractions were respectively: total cholesterol 77 mg%, 32 mg% HDL, LDL 28mg%, triglycerides 84 mg%.

The control abdominal ultrasound one month after hospitalization revealed a homogeneous pancreas, not enlarged, with locally obliterated outer contours. Other abdominal organs were normal. There was a complete regression of skin lesions in the patient (Fig. 4).



Figure 4. Eruptive xanthomas localised on skin of arm after monthly lipid-lowering therapy

DISCUSSION

In the presented case, the occurrence of skin lesions in the form of eruptive xanthomas was the first manifestation of metabolic disorders, and proceeded by several months diagnosis of type 2 diabetes and severe hyperlipidemia.

Xanthomas have the form of lumps or nodules. They are formed as a result of penetration of lipoproteins through the blood vessel wall. Once inside the subendothelial space, they are captured by macrophages. Pathophysiology concerning formation of xanthomas corresponds with formation of atherosclerotic plaques. An excess of modified LDL particles and lipoprotein lead to uncontrolled their apprehension by the macrophages. As a result, they are created foam cells and then giant cells Touton type. The process of creating clumps may be limited in the early stages through the alignment of lipid disorders. In later stages, eruption can perpetuate [3]. There are several types of xanthomatous changes, depending on the type of dyslipoproteinaemia. The look and location of eruptive xanthomas often provide valuable information on the type of lipid disorder, the most frequent of which are xanthomas of the eyelids in the form of yellow scutellum located on the upper eyelid. These changes are often associated with elevated levels of LDL [3, 4]. Eruptive xanthomas are small yellow or light brown lumps with a hemispherical shape. Some of these changes are surrounded by a pink ring. Eruptive xanthomas appear within a few days or weeks, and have a tendency to complete or partially regress after the regulation of lipid disorders. These changes usually occur on the buttocks and the extensor part of the upper and lower extremities. The appearance of these lesions is associated with increased levels of triglyceride-rich lipoproteins (VLDL, chylomicrons), and therefore, in particular, they occur in the familial hypertriglyceridaemia and familial lipoprotein lipase deficiency [2, 5, 6]. Eruptive xanthomas may occur in patients with poorly regulated diabetes or, as described in the presented case study, may precede the diagnosis. Treatment of xanthomas is reduced to the treatment of hyperlipidemia and diabetes [7, 8]. It is recommended to introduce a change in one's lifestyle, loose weight, exercise, eat a diet rich in fibre, plant sterols and omega 3 fatty acids, and reduce the intake of saturated fats, carbohydrates and alcohol. The purpose of this treatment is to reduce LDL-cholesterol and triglycerides, decrease the

risk of vascular complications, as well as the formation of xanthomas. Hypertriglyceridaemia may be the cause of an episode of acute pancreatitis. This applies to patients with disorders concerning lipid transformations, such as genetic hyperlipoproteinaemia. In patients, hyperlipoproteinaemia types I and V cause acute pancreatitis without factors such as gallstones or alcohol. Triglycerides can initiate acute pancreatitis by releasing fatty acids.

CONCLUSION

All in all, early diagnosis and effective treatment of diabetes patients protects them against the development of the acute condition, especially chronic complications of diabetes. In medical practice, and especially in general practice, it is vital to pay attention to possible problems associated with the skin of the patient. This can be very helpful in assessing the severity or sometimes detect diabetes and possibly referral patient for specialized tests. Skin lesions in the form of eruptive xanthomas occur as one of the subsequent symptoms of diabetes, but may also be a first symptom of the disease, or even surpass the diagnosis for a few months.

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