A woman with poorly controlled type 1 diabetes and pruritic papules on her buttocks
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A 45 year old lady presented with longstanding poorly controlled type 1 diabetes who had recently been omitting insulin doses due to family stress. She had new onset itchy skin-coloured papules on her buttocks and extensor surfaces of two weeks duration (Figure 1). Her HbA1c was 120mmol/mol (13.%) and she had declined statin therapy for hyperlipidaemia previously. On admission her triglycerides were 60.8 mmol/L and total cholesterol was 18.0 mmol/L.

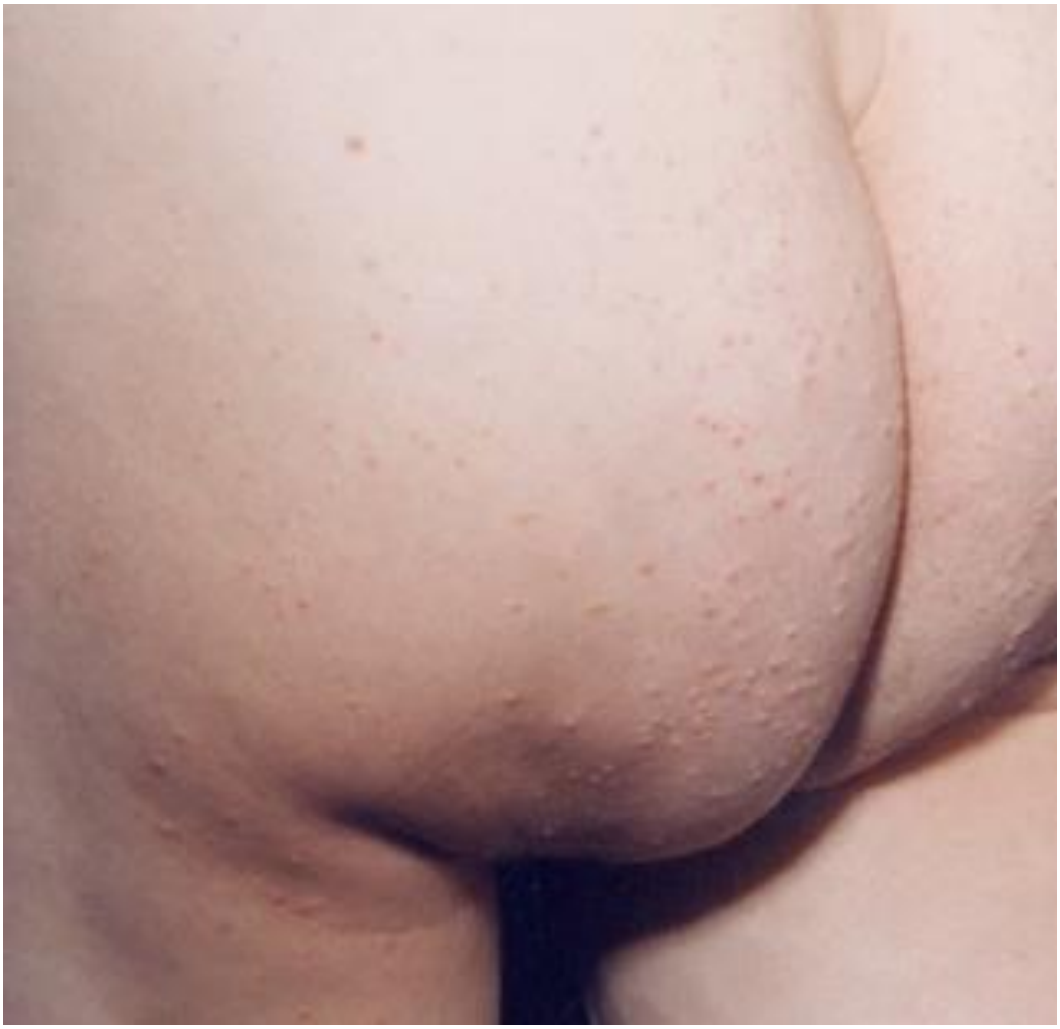

Figure 1. *New onset papular rash*

Questions:

1. What physical sign is demonstrated in the image and what is the probable underlying cause?
2. What is the pathological process of the condition in this patient?

3. How is this condition diagnosed, what are the complications, how is it treated and what is the prognosis?

Answers and learning points:

Question 1

The image demonstrates eruptive xanthoma (EX). EX are characterised by yellow, red or skin-coloured papules, between two and five millimetres in diameter, with an erythematous border. Lesions often display koebnerisation (explain this…) and may be itchy [1]. Xanthoma are usually found over the extensor surfaces, buttocks and back [2]. In this case EX has likely occurred as a result of extreme hypertriglyceridaemia secondary to poorly controlled diabetes. Elevated triglyceride levels may be primary (usually due to genetic dyslipidaemias) or secondary to another disease process such as diabetes, hypothyroidism or nephrotic syndrome [3].

Question 2

In normal physiology the enzyme lipoprotein lipase degrades triglycerides in the bloodstream [4]. However, in poorly controlled diabetic patients, especially those who are somewhat resistant to insulin, an acquired lipoprotein lipase deficiency may occur. This ultimately leads to grossly elevated blood triglyceride levels [5]. EX is caused by the excessive uptake of these circulating triglycerides by macrophage cells. The lipid-laden macrophages (known as foam cells) and other inflammatory cells accumulate between collagen layers in the skin, causing papules known as xanthoma.

Question 3

EX is almost always a clinical diagnosis. It is based on the typical appearance and distribution of the lesions in the context of hypertriglyceridaemia. Occasionally a skin biopsy may be taken to confirm the diagnosis, and this shows foamy histiocytes in the dermis with an associated acute and chronic inflammatory response [6]. A diagnosis of EX should prompt the clinician to look for associated underlying metabolic derangements, including diabetes.

The main co-morbidities of EX are pancreatitis, coronary artery disease, lipaemia retinalis and granulomatous kidney infiltration; these are all due to elevated triglycerides [7,8].

Treatment of EX involves addressing the underlying cause. In this case, diabetic control needs to be optimised with appropriate insulin therapy and patient counselling to improve adherence with insulin. Although HMG-CoA reductase (statin) therapy has a modest triglyceride-lowering effect, fibric acid derivatives including gemfibrozil and fenofibrate are the mainstay of treatment for elevated triglycerides [9].

The prognosis of EX is good. Lesions tend to resolve completely with no residual scarring following treatment of the underlying condition [1].

Learning points:

1. Eruptive xanthoma occurs as a result of elevated triglycerides, sometimes secondary to diabetes
2. Lesions resolve with treatment of the hypertriglyceridaemia / underlying causes.

References:

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