Pimples and pustules in diabetes

Rowan Hillson

Pimples might seem trivial. But just one can cause acute embarrassment to a selfie-obsessed teenager. Extensive skin eruptions can cause psychological problems:

'I was diagnosed with Type 1 diabetes several months ago. Since then, my face has broken out like crazy. Has anyone else had this problem, be it Type 1 or Type 2? I didn’t have this problem as a teenager and it is literally driving me crazy!'1

'Acne sufferer Jordan Marc Sully’s 15-year battle with the condition left him on the brink of suicide. The 31-year-old was so embarrassed by his spots that he spent two years refusing to see ANYONE.'2

This article is about firm(ish) raised skin lesions rather than blisters. I have chosen a few topics but dermatology is a vast specialty – if in doubt ask the expert.

Infections

In diabetes, sensory loss, impaired vision, reduced immunity, poor circulation, and frequent health care contacts risking cross-infection all increase the risk of skin infections which may spread rapidly and heal slowly. Even a pustule can sometimes have severe consequences.

'A 65-year-old man presented with fever and painful swelling at the back for last 2 weeks. His prior history was significant for long-standing type 2 diabetes of 20 years duration and systemic hypertension. Clinical examination showed red, swollen, painful carbuncle with gangrenous patch at the centre and multiple pus points.3

Pimples may become pus-filled pustules or boils (furuncles). Boils may coalesce to form a carbuncle with multiple sites oozing pus. Pus may collect into an abscess which is most likely, unmasking of latent immuno-mediated diseases is common in shaved areas such as beard, axillae or legs. Inflammation around ingrowing hairs can become infected, usually with Staphylococcus aureus.4

People with diabetes are more likely to have skin and soft tissue infections than people without diabetes. Full figures are unknown as most skin infections will be minor and unreported.

In Ontario, Canada 513 749 people with diabetes were matched with controls without diabetes. Those with diabetes had a risk of hospitalisation or physician claim of 1.21 (99% CI 1.20–1.22) compared with non-diabetic people. The risk of cellulitis was 1.18 (1.76–1.86).4

Among >2 million episodes of skin and soft tissue infections in US ambulatory and hospitalised settings, abscess/cellulitis was the most common (66% in those with diabetes compared with 57% among individuals without diabetes). People with diabetes were five times more likely to have complications, four times more likely to be hospitalised, and more likely to be readmitted than those without diabetes.5

Any organism (including rare or multiple ones) can be involved. The most likely pathogen is Staphylococcus aureus. It causes local and, rarely, disseminated infection. The latter may present as body-wide pustules. Staphylococcus aureus septicemia, toxic shock or scalded skin syndrome may be fatal.

People with skin or soft-tissue methicillin-resistant Staphylococcus aureus infections were treated with linezolid or vancomycin. Treatment was less successful in those with diabetes compared with people without diabetes (72.3% vs 85.8%), and the latter had shorter length of hospital stay.6

Warts

A 74-year-old woman with type 2 diabetes ‘complained of painful lumps that had developed at the sites used for obtaining blood samples for glucose monitoring.’7 My DD has many warts on her hands and many are located right where she pokes for testing. Is this a coincidence or is it because she does not always wash her hands when testing?8

No, this is not a coincidence. Warts are caused by the human papilloma virus which can be inoculated into finger-pricks. Warts are common on the hands. People with warts should avoid them when finger-pricking, clean the skin with water, dry with a clean tissue/towel, and use a new lancet each time.

Acne

Are people with diabetes more likely to have acne? I’m not sure. Acne occurs in people with polycystic ovarian syndrome. They are insulin resistant so diabetes prone.

Isotretinoin treatment is used in severe cases. Depression and suicide are among reported side-effects. Lipid levels may rise. ‘Elevated fasting blood sugars have been reported, and new cases of diabetes have been diagnosed during isotretinoin therapy.’9 While type 2 diabetics is most likely, unmasking of latent immuno-mediated diabetes has been reported.10

Folliculitis and perforating dermatosis

Folliculitis, inflammation or infection around hair follicles is common in shaved areas such as beard, axillae or legs. Inflammation around ingrowing hairs can become infected, usually with Staphylococcus aureus.

‘A 46-year-old man presented with a pruritic diffuse eruption... His medical history included a heart transplant, insulin-dependent diabetes mellitus, chronic renal failure for which he was receiving peritoneal dialysis... An examination showed follicular keratotic papules that were distributed diffusely over his legs and buttocks... skin biopsy showed a hair follicle with perforation that extended into the dermal tissue.’11

Acquired perforating dermatosis or folliculitis with ‘pruritic dome-shaped papules with central crusts arising on the trunk and extensor limb surfaces’ affects up to 10% of US haemodialysis patients. A UK study found the dermatosis in 8/72 dialysis patients, seven of whom had diabetes.12

Granuloma annulare

Granuloma annulare is usually a ring of raised skin-coloured, pink or purple lumps. Annullar, nodular and disseminated versions occur. A retrospective review of 557 patients with granuloma annulare found insulin-dependent diabetes in 16 patients (compared with 0.9 expected)
and within five years two more patients had developed insulin-dependent diabetes. In all but one case the patient had localised granuloma annulare. The association may be with the nodular variant, described in four cases, three with type 1 diabetes. The condition is benign (apart from cosmetic aspects) and often settles spontaneously over months or years; treatment is difficult.

**Eruptive xanthomata**

‘A 28-year-old male veteran… with uncontrolled type 2 diabetes, nonalcoholic steatohepatitis (NASH), hyperlipidaemia… presented… with a six-month history of what he called “warts”… The lesions began as small red bumps… On exam… the patient had 3 to 6mm yellowish papules with erythematous borders and central lobulation that were too numerous to count. The papules were distributed across the elbows, right knee, lower back, and buttocks…’ Clinically and on biopsy the lesions were characteristic of eruptive xanthomatosis which affects extensor surfaces. The patient had an HbA1c of 14.7% (137mmol/mol), and a very high triglyceride of 1478mg/dL (16.8mmol/L). A similar report describes eruptive xanthomatosis in newly-diagnosed diabetes, and reminds us that sodium measured with dilutional methods appears artefactually low in hypertriglyceridaemia. To prevent pancreatitis treat severe hypertriglyceridaemia promptly by lowering glucose and lipids. Glucose control usually controls triglycerides unless, rarely, the patient has an inherited hypertriglyceridaemia. Xanthoma may resolve after triglycerides fall.

**Skin cancers**

Both diabetes and skin cancer are relatively common. Remember to include cancer in your differential diagnosis of a skin lesion.

An American telephone survey including 25 964 people with diabetes aged ≥18 years found an increased frequency of cancer among those with long duration of diabetes. Among those with ≥15-year duration and adjusting for confounders, risk of non-melanoma skin cancer was 2.5 (1.6–3.9) compared with those with duration under 15 years. A large Taiwanese study found that, in people with diabetes aged >60 years, rates of all skin cancers, and of non-melanoma skin cancer were raised compared with those with diabetes aged >60 years, rates of all skin cancers, and of non-melanoma skin cancers 1.6 (1.17–2.19). The relative risk for all skin cancers was 1.46 (1.09–1.97) across the elbows, right knee, lower back, and buttocks…’

**Summary**

Small raised skin lesions are common. Causes are multiple. Beware infection in people with diabetes, especially *Staphylococcus aureus* which can spread internally and externally, sometimes rapidly.

Warts can be spread during finger-pricking. Monitor mood, glucose, and lipids during isotretinoin therapy for acne.

Folliculitis is usually minor. Acquired perforating folliculitis occurs in haemodialysis patients, especially with diabetes. Folliculitis can become infected.

Granuloma annulare is more common in people with diabetes.

Eruptive xanthomatosis indicates severe hypertriglyceridaemia requiring urgent treatment.

Remember skin cancer in raised skin lesions. Skin cancer appears more likely among people with diabetes than in those without.

Encourage people with diabetes to be meticulous about skin hygiene.

**Dr Rowan Hillson, MBE, Past National Clinical Director for Diabetes**

**References**


10. Venkatesan R, et al. Association between oral isotretinoin therapy and unmasked eruptive xanthomata as a cutaneous manifestation of hypertriglyceridaemia which can spread internally and externally, sometimes rapidly. The role of diabetes mellitus in the treatment of skin and skin structure infections caused by methicillin-resistant *Staphylococcus aureus* which can spread internally and externally, sometimes rapidly. We tend to focus on medical aspects of care and not everyday ones. One of my patients had recurrent admissions with infections. It was not until someone did a home visit that we realised that the house was in a terrible state with no roof.