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Cutaneous And Dermatic Changes Of Diabetes

Department: - 3rd yr BMS

Block: -C.N.S

Student name: - Houssein_Adel_Elfitouri

Student no: - 1277.

Lab Group: - C.

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This report covers the activity of Basic Medical Science

Abstract:

Diabetes is the most common endocrine disorder, affecting **8.3%** of the population . Skin disorders will be present in **79.2%** of people with diabetes. A study of **750 patients** with diabetes found that the most common skin manifestations were cutaneous infections (47.5%), xerosis (26.4%), and inflammatory skin diseases (20.7%). Individuals with type 2 diabetes **are more likely** than those with type 1 diabetes to develop cutaneous manifestations. Cutaneous disease can appear as the first sign of diabetes or may develop at any time in the course of the disease. This review provides a brief overview of skin conditions that primary care providers (PCPs) may encounter when treating patients with diabetes.⁽¹⁾

Discussion:

Conditions Associated With Insulin Resistance

Acanthosis Nigricans

Acanthosis nigricans (AN) is likely **the most readily recognized skin manifestation of diabetes**. It is present in up to **74%** of obese adult patients and can be predictive of the existence of hyperinsulinemia. The presence of AN is a prognostic indicator for developing **type 2 diabetes**. prevalence of AN is lowest in whites (0.5%), higher in Hispanics (5%), and even higher in African Americans (13%) . hyperpigmented velvety thickening of skin folds, presenting predominantly in the neck, axilla, and groin areas Possible additional presentations could include skin tags and hyperkeratosis. Type 2 diabetes–related AN has an insidious onset and initially presents as hyperpigmentation. Children aged 8–14 years who had AN were found to have insulin resistance, and 25% had disturbed glucose metabolism at the time of the study. Microscopically, AN presents as papillomatosis and hyperkeratosis (epidermis in irregular folds, exhibiting various degrees of acanthosis)}>"Acrochordrons".

Diabetic Dermopathy

Population studies from Sweden demonstrate that diabetic dermopathy (DD) affects 33% of patients with type 1 diabetes, 39% of patients with type 2 diabetes,. However, a more recent study found that DD is present in only 0.2% of people with well-controlled type 2 diabetes . This condition presents as small (<1 cm), well-demarcated, atrophic depressions, macules, or papules on the pretibia and is considered to be a sign of insulin resistance. Lesions heal and disappear within 1–2 years on their own, leaving atrophic hypopigmentation at the site of origin . Little is known about the relationship of DD to diabetes. On cadaveric skin biopsy, **4 of 14** samples demonstrated moderate to severe arterial wall thickening, and **11 of 14** samples demonstrated mild basement membrane thickening. Stain findings suggested the presence of hemosiderin and melanin depositions in the epidermis of affected patients.

Eruptive Xanthoma

Presents on the buttocks, elbows, and knees as sudden onset crops of yellow papules with an erythematous base . EX is rare and occurs more often in patients with poorly controlled type 2 diabetes. The sudden appearance of EX can be worrisome to patients and may prompt a visit to the physician. . These lesions can be the **first sign of diabetes**. The decrease in lipoprotein lipase activity seen in insulin-dependent diabetes results in an accumulation of serum triglycerides. Occasionally, when the serum triglyceride level reaches 2,000 mg/dL, lipids will deposit in the skin.

Rubeosis Faciei

(RF), a relatively common skin manifestation associated with diabetes, is a microangiopathic complication. It may go **unnoticed** by patients and physicians. However, if recognized, it should alert physicians to look for other microangiopathic complications such as retinopathy . RF presents as a flushing to the face. This condition is seen in 3–5% of people with diabetes. In a study of 150 participants comparing facial redness association with diabetes, showed that 59% of patients with diabetes had markedly red faces compared to slightly red or not red (21 and 20%, respectively).

Epidermal Necrolysis/Stevens-Johnson Syndrome is a rare mucocutaneous necrotizing condition diagnosed in **1–6 cases** per million people annually worldwide . A more severe form called **toxic epidermal necrolysis** is diagnosed at a rate of **0.4–1.2 cases** per million people per year . Because of their similar etiology, pathogenesis, and clinical and histological presentation, it has been proposed to refer to both conditions as epidermal necrolysis (EN). It could present with fever, headache, rhinitis, cough, malaise, burning eyes, and dysphagia. In 1–3 days, EN progresses to mucocutaneous ulcerations, necrosis and detachment of epidermis, severe stomatitis, and ocular involvement . Nickolsky’s sign—displacement of epidermis with lateral pressure—is positive over the blistering epidermis. EN is a life-threatening emergency.

Conditions Associated With Type 1 Diabetes

Necrobiosis Lipoidica

Necrobiosis lipoidica (NL) is rare, appearing in 0.3–1.6% of people with **type 1 diabetes**, more often in women than men . Typical lesions of NL occur in young and middle-aged patients and present most commonly on the pretibial skin as irregular, painless ovoid plaques **with a yellow atrophic center and a red to purple periphery**. The lesions are usually multiple and bilateral. Lesions may ulcerate spontaneously or from trauma. Of the patients with NL, 11–65% have type 1 diabetes at the time of cutaneous diagnosis . Ninety percent of people with NL who do not have diabetes eventually develop diabetes (**mostly type 1 diabetes**). The cause of NL is currently unknown. Proposed causes are localized trauma, microangiopathy, immunoglobulins and fibrin deposition, and metabolic changes .

Vitiligo

Vitiligo affects 0.3–0.5% of world population, making it the most common depigmenting disorder. Patients present with patches of depigmentation of skin and hair. Possible etiologies are both environmental and polygenetic. This condition affects males and females equally . Out of several subtypes, generalized vitiligo is most common. It is associated with autoimmune diseases in **20–30%** of cases. The most common associations are with Hashimoto’s thyroiditis, Grave’s disease, rheumatoid arthritis, psoriasis, **type 1 diabetes** (usually adult-onset), pernicious anemia, systemic lupus erythematosus, . A 2009 study of 50 patients with type 1 diabetes reported that 4% of subjects had vitiligo . Genetic vitiligo (GV) is most often a gradually progressive.

Bullosis Diabeticorum

or diabetic bullae, are seen in 0.5% of individuals with **type 1 diabetes**. This condition is seen **more often in men** and in those with longstanding peripheral neuropathy. The lesions arise spontaneously and are primarily on the dorsa and the sides of the lower legs and feet. Occasionally, they are seen on the forearms and hands. The lesions present as clear bulla on non-inflamed bases. They are painless and contain sterile fluid. Lesion size can range from a few millimeters to a few centimeters.

Other Diabetes-Related Conditions

Psoriasis

Psoriasis is a chronic, inflammatory, polygenic skin disorder with environmental triggers such as trauma, medications, and infection. Psoriasis is characterized by erythematous scaly papules and plaques with pustular and erythrodermic eruptions occurring most commonly in areas of friction such as scalp, elbows, knees, hands, feet, trunk, and nails. Koebner phenomenon This condition can develop at any age, with the **most common onset between 15 and 30 years of age**; it is uncommon in people <10 years of age. It affects 2–3% of the U.S. population. Approximately 9% of people with diabetes (type 1 or type 2) has psoriasis . . A 13-year study with 52,000 participants concluded that people with psoriasis have a 49–56% greater risk of developing type 2 diabetes later in life.

Xerosis

Xerosis is another name for **dry skin**. It is the **second most common** skin manifestation in people with diabetes. In a study of 100 patients with diabetes and skin lesions, xerosis was present in 44% of the patients Patients with renal disease also frequently suffer from xerosis.

Scleroderma Diabeticorum

Scleroderma diabeticorum is a condition of thick, indurated, erythematous plaques occurring on the upper back and neck. Lesions may have erythema. This condition is seen in ~2.5–14% of individuals with diabetes. The condition is more common in obese middle-aged men with type 2 diabetes. Patients with scleroderma diabeticorum are often asymptomatic; however, neck and back pain may occur. The diagnosis is often made clinically, although a definitive diagnosis is confirmed by skin.

Onychodystrophy presents as excessive nail thickening and deformity, which may cause accumulation of debris and subsequent infection of the toe that should be treated as a diabetic ulcer. Poorly fitting shoes may cause repeated trauma and worsening of the injured site. In patients with diabetes, onychodystrophy is the result of poor peripheral circulation and diabetic neuropathy. The condition itself may cause diabetic foot ulcers.

Periungual Telangiectasias Periungual telangiectasias present as nail fold erythema, dilated blood vessels visible to the naked eye, fingertip tenderness, and thick cuticles. Telangiectasias arise in the nail beds of people with diabetes after loss of capillary loops and dilation of remaining capillaries. The condition is present in up to 49% of people with diabetes. Some patients also experience fingertip tenderness.^(2,3)

Summary:

Diabetes is the most common endocrine disorder, and many cutaneous disorders are associated with diabetes. Knowledge of these skin conditions can aid PCPs in the diagnosis of diabetes and the treatment of its associated skin conditions. Most conditions can be managed by PCPs, but referral to a dermatologist may be warranted in some cases. As the incidence and prevalence of diabetes increases, skin manifestations associated with diabetes will become more common. Thus, PCPs should familiarize themselves with their presentation and treatment.

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