Review Article

Bullous Disease of Diabetes (Bullosis Diabeticorum)

Abstract:

Acanthosis nigricans, acrochordrons, diabetic dermatopathy, necrobiosis lipoidica, and bullous diabeticorum are some of the cutaneous symptoms of diabetes. Bullous illness (bullosis diabeticorum) is a blistering, non-inflammatory condition of the acral skin. Diabetes bullous illness is more common in people who have had diabetes for a long time or who have many comorbidities. Although the actual cause is uncertain, it is likely to be multifactorial. Neuropathy, nephropathy, vasculopathy, and UV (ultraviolet) light are all suggested to have a role. BD is most likely caused by the various problems that come with poorly managed diabetes. The exact number of people who have BD is unknown. The majority of case studies in the literature were based on a small number of cases. Bullous diabeticorum is a restrictive diagnosis, which necessitates a histological study that includes direct immunofluorescence to rule out other vesicobullous illnesses. In terms of BD management, no strong consensus has formed. The blisters have historically been thought to be self-limiting, with bullae resolving in 2 to 6 weeks if left untreated. In some cases antibiotic may be used. In this article we'll be looking at Bullosis Diabeticorum. Its etiology, epidemiology, diagnosis, and treatment.

Introduction:

Diabetes-related bullous illness (bullosis diabeticorum) is a blistering, non-inflammatory condition of the acral skin that is only found in people who have diabetes. Diabetes bullous illness is more common in people who have had diabetes for a long time or who have many comorbidities. The disease's cause is yet unknown. Bullous diabetes condition has been reported to affect about 0.5 percent of diabetic patients in the United States. Male patients are twice as likely as female ones to develop cancer. [1-6] In 1930, Kramer described bullous-like lesions in diabetic patients; in 1963, Rocca and Pereyra classified this as a

phlyctenar (looking like a burn-induced blister). In 1967, Cantwell and Martz are credited with coining the term bullosis diabeticorum. It's also known as diabetic bullae or diabetic bullous illness. [1,7-9]

Acanthosis nigricans, acrochordrons, diabetic dermatopathy, necrobiosis lipoidica, and bullous diabeticorum are some of the cutaneous symptoms of diabetes. Because bullous diabeticorum is a rather uncommon sign of diabetes, the clinician must have a strong index of suspicion in such situations. It is a male-predominant, spontaneous, recurrent, non-inflammatory, blistering disorder that affects the acral and distal skin of the lower extremities. Bullae are often big, uneven, tight, and loaded with serous fluid. Adults with long-term uncontrolled diabetes and peripheral neuropathy are more likely to develop this illness. The cause of this illness is unknown, however it is likely complex. [10-14]

Although the actual cause is uncertain, it is likely to be multifactorial. Neuropathy, nephropathy, vasculopathy, and UV (ultraviolet) light are all suggested to have a role. There is currently no research that adequately depicts the association between diabetic bulla incidence and the degree of metabolic dysfunction or glycemic control. BD is most likely caused by the various problems that come with poorly managed diabetes. Usually, acral distributions of blisters or bullous lesions indicate alterations associated to trauma or peripheral neuropathy susceptibility. Bullous lesions usually heal on their own after two to six weeks. If secondary infections develop, antibiotics and/or intensive wound care may be required. Aspiration of bullous lesions, on the other hand, may aid in preventing inadvertent rupture and associated consequences. [15]

Blisters are classified histologically into three kinds based on the degree of cleavage. The most frequent variety has a subepidermal cleft at the level of the lamina lucida that appears and disappears without scarring. Blisters contain hyaline and are seen on the tips of the toes and, less commonly, on the dorsal surfaces of the feet. Diabetic peripheral neuropathy is more common in patients with these clinical symptoms because the afflicted limb has excellent circulation. The second form is more uncommon, and it involves hemorrhagic lesions that heal with scars and atrophy. The cleavage plane is below the dermoepidermal junction, and anchoring fibrils are destroyed. Multiple blisters connected with sun

exposure and noticeably browned skin are the third form identified. Porphyria cutanea tarda, which affects the feet, legs, and arms, must be recognised. [16-20]

Etiology:

Bullosis diabeticorum has a complicated pathogenesis that appears to be complex. Bernstein and colleagues found that individuals with insulin-dependent diabetes have a significantly lower threshold for suction blister development than age-matched normal controls, with a highly significant difference. The significance of trauma has also been postulated, due to the acral predominance of BD in individuals with diabetes mellitus. However, with the absence of any history of trauma in most cases and the fact that these lesions recover spontaneously, this cannot explain for the absence of BD in the vast majority of diabetics. Because the majority of individuals with diabetes mellitus and BD also have nephropathy and neuropathy, some researchers have speculated that microangiopathy may play a role in connective tissue premature ageing and, more specifically, a local subbasement membrane zone connective-tissue modification. [21-25]

Some researchers have indicated an etiologic relationship, presumably due to a local sub-basement membrane-zone connective-tissue modification, in individuals with bullous illness of diabetes, but not all. Some scientists agree microangiopathy-related blister induction is caused by hyalinosis of tiny vessels found on biopsy specimens. UV radiation is thought to play a role in some cases, particularly in patients with neuropathy. Calcium and magnesium disturbances, as well as improper glucose metabolism, have been linked to the condition. Immunological deposition has been suspected as a cause of vasculopathy in patients with positive DIF on rare occasions. Glycemic control's alleged importance has yet to be proven. [1]

Epidemiology:

The exact number of people who have BD is unknown. The majority of case studies in the literature were based on a small number of cases. Larsen and colleagues found that the incidence of BD was 0.16 percent each year in a retrospective analysis of 5000 people with diabetes mellitus. It was found in individuals ranging in age from 17 to 80, with a median age of 55. Adult men with long-term uncontrolled diabetes were more likely to develop BD. The male-to-female ratio is reported to be 2:1. [21]

Bullous diabetes disease has been found to affect about 0.5 percent of diabetic individuals in the United States, while its prevalence may be higher due to underreporting of blistering. Patients with uncomplicated or newly diagnosed diseases, such as type 2 diabetes, could be affected as well. Only a few cases of the condition have been reported in people with prediabetes. The development of diabetic bullous illness normally occurs between the ages of 17 and 84, though a case in a 3-year-old infant has been described. Adult men with long-term, uncontrolled diabetes and peripheral neuropathy are more likely to develop bullous illness. [1]

Diagnosis & Evaluation:

Bullous diabeticorum is a restrictive diagnosis, which necessitates a histological study that includes direct immunofluorescence to rule out other vesicobullous illnesses. The histology characteristics aren't specific. Intraepidermal or subepidermal blisters with varying degrees of spongiosis, as well as scanty-to-moderate nonspecific inflammation, might be seen. There is no laboratory test that can confirm the diagnosis of this illness. Bullous diabeticorum is treated with caution. To avoid subsequent infection, keep the blister clean. While lesions usually cure on their own in 2–6 weeks, they frequently return in the same or different places, as in our index case. [10]

The blisters are usually big and uneven in form. Nonacral locations (e.g., the trunk) may also be affected, despite the fact that they are far more prevalent over the acral regions and on the lower extremities. Friction blisters, bullous fixed drug responses, bullous pemphigoid, bullous SLE, and epidermolysis bullosa acquisita are further differential diagnoses to consider in these patients. Routine histological examinations of diabetes bullae reveal nonspecific characteristics such as an intraepidermal or subepidermal bulla with no or little inflammatory components. Direct immunofluorescence does not disclose any primary immunological abnormalities; hence it is noncontributory. [26]

Once a diagnosis of BD has been made, the patient should be evaluated for his metabolic status, and his glycemia levels should be kept under control. If diabetes mellitus is a known diagnosis, screening should be done as away. Patients with confirmed BD should be watched for subsequent infection until the lesions have healed completely. Ophthalmological and neurological exams are advised in

individuals with diabetes mellitus and BD due to the greater frequency of microangiopathic consequences. Renal function testing, particularly for the detection of microalbuminuria, should also be performed. [21]

It's crucial to keep an eye out for subsequent infections and distinguish yourself from other blistering dermatoses. Frictional blisters (intraepidermal necrosis), bullous fixed drug reaction (basal cell degeneration, inflammatory infiltrates), bullous pemphigoid (inflammatory infiltrates), bullous SLE (basal cell degeneration, inflammatory infiltrates), and epidermolysis bullosa acquisita (inflammatory infiltrates) all have histopathological features that are conspicuous by their absence in diabetic bullae Additionally, a negative DIF test may reasonably rule out bullous pemphigoid, bullous SLE, and epidermolysis bullosa acquisita. [26]

Management:

In terms of BD management, no strong consensus has formed. The blisters have historically been thought to be self-limiting, with bullae resolving in 2 to 6 weeks if left untreated. Many specialists advise leaving the blistered skin alone since it serves as an effective and sanitary cover for the underlying lesion. To relieve discomfort and avoid future infections, some authers recommend a tiny-bore needle aspiration or the creation of a small window in the blister roof, followed by the use of topical antiseptics or antibiotics. Given the considerable risk of osteomyelitis, surgical therapy of BD with soft tissue infection was indicated in certain instances. Autologous bone marrow mesenchymal cell transplantation therapy was used to successfully treat recurrent BD. [21]

Healing normally occurs on its own after a few weeks, but any subsequent bacterial infection or bleeding should be closely monitored. According to one study that tracked 25 patients with BD for three years, the median recovery duration for patients was 2.5 months. It is suggested that the blisters be kept intact to act as a sterile bandage and avoid further infection. To avoid unexpected rupture, some treatments include aspirating blisters with a tiny bore needle. Antibiotics can be used topically to prevent infections, and petroleum jelly can be used to relieve pain. Osteomyelitis is an uncommon complication of the illness, which might reoccur often. Foot sores can develop into chronic ulcers, which can

lead to necrosis and infection. Tissue necrosis may involve tissue transplantation and debridement. [27]

in a case reported by Peta Craike; Bullosis diabeticorum appears to be the cause of a blisters. In that case circumstances, there was no clear standards for how to manage blistering. The blisters could either be left intact or de-roofed, and their treatment poses a lot of problems. In order to maintain a sterile field, unbroken blisters were left intact; fractured blisters were de-roofed to prevent infection, as is standard procedure for any type of blister management. When the healing outcomes were compared, there was no noticeable difference. After healing, the patient returned to the clinic with another bout of blistering a few weeks later. The therapy protocol remained the same. The blisters on this occasion, however, did not heal as well, and the patient developed osteomyelitis, requiring several digital amputations as a result. This example highlights how challenging wound care may be for a diabetic patient with comorbidities like neuropathy, peripheral vascular disease, and an increased susceptibility to infection. [28]

Discussion:

Bullae are most commonly found on acral skin surfaces, especially the feet. While this disease is specific to diabetic people, it may resemble other blistering disorders. in a case report of a 75-year-old Hispanic man with type 2 diabetes who developed chronic diabetic bullae during an 11-year period. Researchers measured the patient's blood glucose level 50 times when bullae were present and 50 times when they weren't. It was revealed that when the patient's blood glucose level was high, he was more prone to develop bullae. that study reveals that poor blood glucose control, particularly hyperglycemia, may play a role in the appearance of this dermopathy. [29]

The scenario of diagnosing a BD may be more complicated than other cases looking at another case report of A 75-year-old African-American man with a 3-year history of painless, fluid-filled blisters that had been treated with doxycycline, cephalexin, and topical corticosteroids by his primary care physician with no noticeable improvement. The blisters had ruptured on their own, leaving scars. He denied that he had had any prior trauma. On the front region of both tibias, physical examination revealed nontender bullae measuring up to 4 cm 3 cm and containing serous fluid. Nikolsky's sign was a negative one. There was no sign

of inflammation in the area. A biopsy demonstrated the development of subepidermal bullae with a scant inflammatory infiltration. Immunoglobulin (Ig) G, IgA, IgM, complement C3, C5b-9, and fibrinogen deposition were all shown to be negative in direct and indirect immunofluorescence examinations. The bullous fluid culture was negative. [30]

Importantly, while diabetic bulla is most commonly detected in diabetic individuals, it can also arise in prediabetic persons. One cause for the condition's underdiagnosis is that it might heal on its own in people who do not seek medical help. Furthermore, doctors who manage diabetes patients may overlook the existence of BD during routine visits. A better understanding of BD may enable doctors to respond quickly and increase patient comfort while avoiding subsequent infections. [27]

Conclusion:

People who have had diabetes for a long period or who have multiple comorbidities are more likely to develop bullous disease (bullosis diabeticorum). Although the exact aetiology is unknown, it is likely to be complex. It's thought that neuropathy, nephropathy, vasculopathy, and UV (ultraviolet) light all have a role. The various complications that accompany with poorly treated diabetes are most likely responsible for BD. It's impossible to say how many people have BD. The blisters have traditionally been assumed to be self-limiting, with bullae disappearing in 2 to 6 weeks if left untreated in terms of BD therapy. Antibiotics may be utilised in various instances.

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