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SCLERODERMA IN TEENAGE PATIENT WITH TYPE 1 DIABETES MELLITUS: CASE REPORT

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ABSTRACT
Objective: We aim to assess the association between insulin dependent diabetes (type1 DM) and other autoimmune diseases such as scleroderma. **Case Report:** In our case, a 13-year-old female, known to have type1 DM on mixtard (70/30) insulin injection subcutaneously admitted through emergency department at Queen Rania Hospital for Children due to hyperglycemia and immediate onset of swelling post each injection and generalized skin tightness. **Discussion:** Due to the skin tightness, the generalized abdominal swelling, and the high blood sugar reading, we thought about scleroderma, so we performed labs and skin biopsy. **Conclusion:** Every patient with insulin dependent DM must be observed for the associated autoimmune diseases.

KEYWORDS: Scleroderma, skin tightness, skin swelling, insulin injection, hyperglycemia, mixtard insulin.

INTRODUCTION
Diabetes Mellitus (DM) in pediatric age group mostly autoimmune and may be associated with other autoimmune diseases such as celiac disease, Hashimoto thyroiditis, vitiligo, or/and primary adrenal insufficiency and multiple other autoimmune diseases. We want to report a case for a teenage patient who is known to have diabetes mellitus insulin dependent, known as type 1, diagnosed as scleroderma through a biopsy, presented with skin manifestation. Diabetes mellitus (DM) is a disease of insulin deficiency or insulin resistance causing a rise in blood sugar. It is different from diabetes insipidus which is rare and has no effect on blood sugar. Diabetes mellitus (DM) has two main types which have common symptoms like polyuria, polyphagia, and general weakness. It is diagnosed by either random blood sugar more than or equal to 200 mg per dl plus symptoms, or fasting blood sugar more than or equal to 126 mg per dl or HBA1C more than or equal to 6.5. Patient with type1 DM should be screened and monitored for associated diseases like celiac disease, autoimmune thyroiditis, skin diseases, and others.[1] A skin complication of type1 DM could be scleroderma which is a chronic autoimmune disease of unknown cause with possible genetic and environmental etiology. The hall mark of scleroderma is thickening and tightening of skin or organs like kidneys, lung, heart, and gastrointestinal tract. It's incidence about 75000-100000 in USA. It has two types: localized (1-3 per 100000) which affects only skin and connective tissue, systemic type (1 per million) which affects skin and other organs. Diagnosis is by history, physical findings, positive specific antibodies, and skin biopsy. Usually treated by steroid and immunosuppressive drugs.[2]

CASE REPORT
A 13-year-old female, known case of type1 DM since 2017, on mixtard insulin. Presented to the emergency department with skin tightness and swelling post injection and high blood sugar readings. No history of vomiting, weight changes, joint pain, skin rash, dysphasia, difficulty of breathing, or genital or oral ulcers. On physical examination: generally, we found her in a stable vital sign, conscious, alert to time place and

person, not jaundiced, no pallor or cyanosis. No limitation of mouth opening and no neck swelling. The skin appeared with no rash, no change in color, pinchable skin, blotched digits, non pitting edema starting from toes extending to chest, pulses felt, capillary refill less than 2 seconds with no evidence of ischemia. Chest was symmetrical bilateral expansion and good air entry bilateral with no ronchi, normal first heart sound and second, no murmurs. Her abdomen was soft and lax with hepatomegaly (liver span 18 cm smooth surface sharp edge), no splenomegaly. Investigation: CBC, KFT, and electrolytes were normal. Elevated liver enzymes (ALT 96, AST 33, ALP 206), ANA negative, ENA positive, ASMA positive (1/40), LKMA negative, BETA 2 glycoprotein immunoglobulin A,G and M were negative, anti-cardiolipin immunoglobulin M and G were negative, Lupus anti-coagulant was negative,. TFT and TTG antibodies were negative (patient has no IgA deficiency). Protein electrophoresis showed decreased albumin and elevated alpha 2 and beta fractions. Her HbA1C was 13.5%. Skin biopsy revealed changes consistent with scleroderma, in that, section of skin showed a lightly atrophic epidermis, the papillary and reticular dermis showed thickened collagen bundles, and a moderate perivascular and periadenxal inflammatory cell infiltrate, composed predominantly of lymphocytes, one hair follicle identified with scattered skin appendages. Masson trichrome stain highlighted the thick collagen bundle. Pulmonary function test was normal, and echocardiography was normal. Abdomen CT with I.V contrast showed hepatomegaly. Patient was treated with Methylprednisolone I.V for 2 days then shifted to Prednisolone tab 5 mg twice daily, in addition to Methotrexate tab 25 mg weekly and Mycophenolate mofetil tab 500 mg twice daily. However, the hyperglycemia was treated with crystalline insulin infusion with scaling until her skin was improved for about 3 days. On her discharge, patient was shifted to basal bolus regimen due to uncontrolled hyperglycemia (iatrogenic cause).

DISCUSSION

Skin manifestation in type 1 DM develops frequently. They are scleroderma like, scleroderma, infection related, or drug induced. It is difficult to differentiate between scleroderma and scleroderma like clinically, but the histopathology in our patient was typical for scleroderma in addition to the presence of antibodies. Commonly, known autoimmune diseases can coexist together. Two cases reported similar to our clinical finding, one of them described an 11 years old female with type 1 DM, celiac disease and scleroderma.[3] The other one reported a 14 years old male type 1 DM who developed pancreatic insufficiency and scleroderma[4] We didn't find other cases. In this case our patient has a rare coexistence of type 1 DM and scleroderma.

CONCLUSION

Physicians should be aware that DM child are prone to develop scleroderma We presented our case due to the existence of association of scleroderma and type 1dm in teenage patient We suggest that further research such randomized clinical trials need to be explored to assess this association.

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