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SUBCUTIS DYSTROPHY IN INSULIN TREATED CIRRHOTIC PATIENT – CASE REPORT

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Abstract

Insulin injections can induce local dystrophies. Many reasons can be but, the most common is the same area repeatedly injected. Our subject is a 50-year-old man insulin treated, also being under medical survey because of HCV, mild Child-Puch score cirrhotic disease. Since the diabetes started, three years ago, the basal/bolus insulin regimen with 4 injections daily was a rule. Despite the hypertrophic area at the upper-outer right thigh, the patient repeatedly injected in this location. The advanced cirrhotic disease revealed altered biochemical tests including ones suggesting coagulopathy with haemorrhagic tendency. The coexistence of dystrophy helped developing a local haematoma. The clinical features are also leading to some potential inflammatory event. The first physical examination of the right thigh injected area, within three years, was followed by an ultrasound interrogation. Both local surgical maneuvers and the assessment of the infectious event, confirmed the disruption of the entire soft tissue with necrosis, haemoragic and bacterial reactions. As a consequence, the map of subcutis tissue, as well as an appropriate insulin injection technique, were taken into consideration.

key words*: insulin dystrophy, hepatic cirrhosis, coagulopathy, ultrasound assessment*

Introduction

The dystrophic areas of insulin injected soft tissues, mainly the subcutis one (sc), can display some hypertrophic, atrophic or nodular forms [1-4]. Sometimes dermal or muscular tissue can also be involved [2, 3, 5, 6].

Multiple aggressive factors were suggested: minor but repeatedly local trauma, re-using needles, inappropriate needles' length or injection techniques [7-9]. The sc atrophies are supposed to have an immunologic substrate. Physical examination must be rigorously performed in order to diagnose some dystrophic areas. Both patient and medical team have to be trained and involved in searching local abnormalities. An ultrasound noninvasive interrogation of dystrophic area helps diagnosis. Some imagistic dystrophic details (diffuse, nodular, fibrosis or necrosis appearances) as well as their location (one or multiple anatomic

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layers) can also be described [1, 3, 10, 11-14]. A hieratic insulin absorption could emerge [1, 15-17].

Case report

A 50-year old male with an advanced cirrhotic disease and insulin treated diabetes, was clinically examined (after 3 years since insulin treatment started) in relationship with the current anatomic area he used to inject.

The physical examination was relevant for cutaneous/sc abnormalities in the upper-outer area of the right thigh. A local hypertrophic, ill-delineated oval-shaped area of 10/7cm was easily noticed. The redness, warmness and softness are strongly suggesting an inflammation and a potential infection. (Figure 1).

A painful reaction was a result only for a profound palpation.

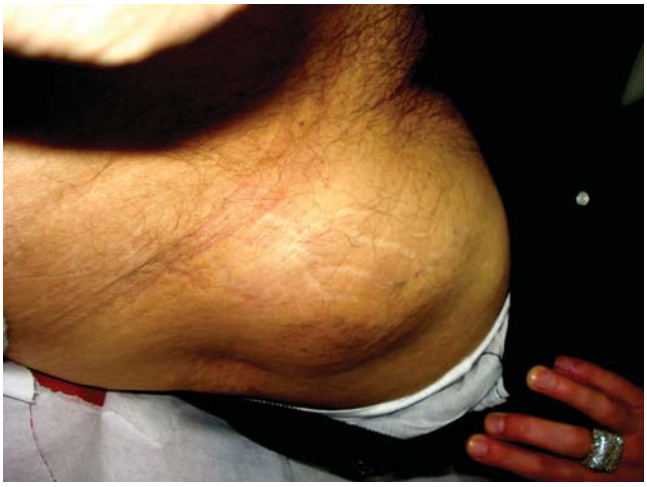

Figure 1. An upper-outer hypertrophic 10/7 cm insulin injected area; local appearances (redness, warmness and softness) are suggesting for inflammation and infection.

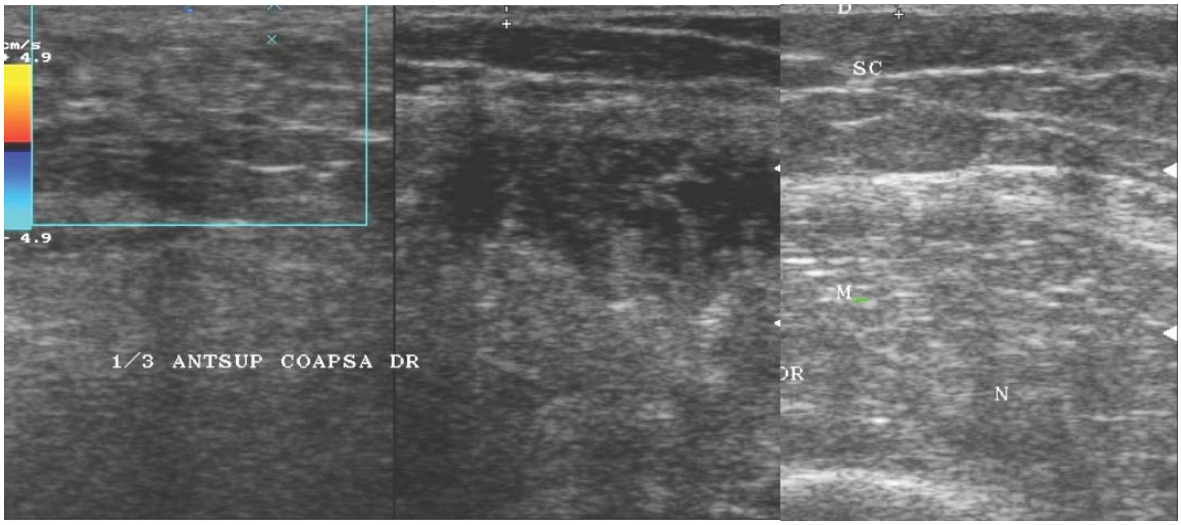

Figure 2. Split screen image: a normal dermis/sc/muscularis appearance (right) is compared with thickened, irregular, ill-delineated dermis/sc/muscularis layers (left) and with a disrupted echostructure of the whole soft tissue, grossly crossed by irregular and thickened septa (middle).

Ultrasound interrogation (Fukuda-Denshi unit with a 7.5-9MHz probe) showed an increase of dermis thickness, irregularities and focal non delineation between dermis and sc

layers. Irregular and thickened septa were crossing sc tissue. Subcutaneous layer got almost double thickness by comparison with a normal nearby one (Figure 2).

Other sc dystrophic subareas have displayed an inhomogeneous hyper-hypoechoic echotexture (Figure 3) even with vascular (color/PW) signals (Figure 4). These areas matched with the clinical fluctuant ones.

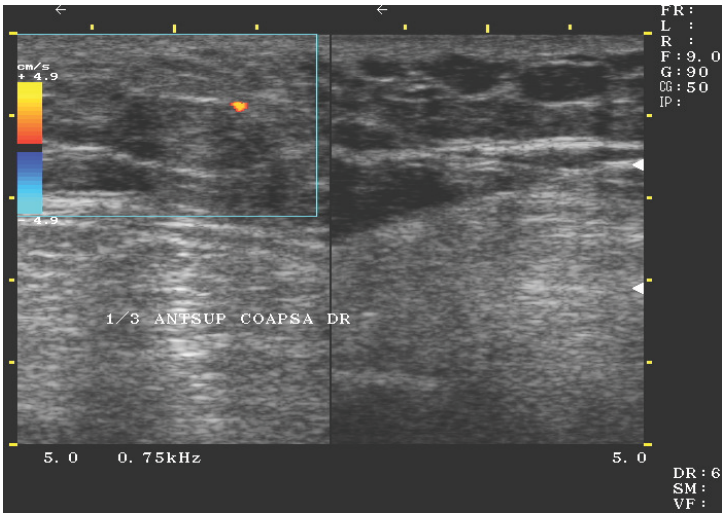

Figure 3. Split screen image. Irregular and thickened dermis/sc layers (left); inhomogeneous hyper-hypoechoic sc layer suggesting haematomas, sc disruption and necrosis (right)

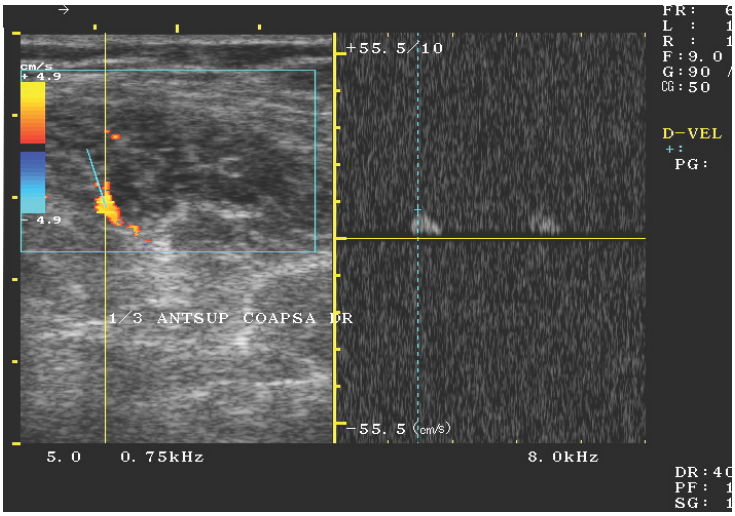

Figure 4. The dystrophic area with an arterial signal (color /spectral) suggesting inflammation and a potential infection.

The patient's biochemical values were accordingly with the advanced hepatic disease. HCV cirrhosis with a mild Child-Puch score also showed coagulopathy and a non-specific inflammatory syndrome. Coagulation abnormalities helped the local overreaction. The hypertrophic dystrophy turned into a complicated one. The initial sterile necrosis and haematomas were further bacterial contaminated. The process has been confirmed by the local surgical maneuver. A meticillin-resistant Staph. aureus was isolated and treated as well.

Discussion

The patient developed, within three years, a dystrophic area as a result of insulin injections. All soft layers like cutis, subcutis and fascia muscularis were insulted. Thickened cutis/sc tissues, massive conjunctive septa grossly crossing the sc area, were complicated by necrosis and haematomas. Insulin was permanently injected within the same place. As we previously mentioned, no focused examination was made within this three years interval. High levels of the HbA1c (8-9%), despite the multiple re-arrangements of insulin schedules showed the failure of glycaemic control. The advanced liver disease made possible some haemorrhagic events within dystrophy. The organism contamination of the already complicated dystrophic area could interfere with insulin absorption [15, 16]. Dystrophic areas do not imply necrosis, haematomas or contamination, as a general rule, mainly with modern disposals [7, 19]. The dystrophic upper-outer right thigh area has been contaminated probably because of uncertain hygienic rules and due to more than 3000 injections over the same surface of 10/7cm cutis. The coagulation abnormalities allow haematomas to appear. Re-used needles (10-20 times) in the above conditions have also converted a sterile medium into a contaminated one.

The occurrence of dystrophies is a rule, when injecting the same area, for years. Furthermore, other inappropriate conditions like: re-using needles, vicious injecting technique, needles length, the lack of a correct exposure of area to be injected, were added. All these factors are known as potential soft tissue offenders [7, 18,19]. That's why a careful physical examination and ultrasound reconstruction of cutaneous /sc map of valid and insulted areas is a must.

The peculiarity of this case is offered by the association between coagulopathy, insulin dystrophy and lack of a specific examination.

Conclusions

The advanced stage of cirrhosis could lead to bleeding predisposition if compensatory therapy fails.

Examinations with a rigorous periodicity could prevent soft tissue damages in this case or in any others. A re-evaluation of disposals and of injection techniques in any patient and even more in particular ones is mandatory.

We cannot rule out the possibility of a local contamination if large and old haematomas are repeatedly and aggressively injected. Some chronic comorbidities implying coagulopathy, simultaneously accompanying insulin treated diabetes, claim more precocious and careful attention related to injected areas.

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