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## **ELDERLY PATIENT WITH GLUCOCORTICOSTEROID-INDUCED SUBCUTANEOUS HEMATOMAS: A CASE STUDY**

Pacjent w podeszłym wieku z krwinkami podskórnymi  
wywołanymi glikokortykosteroidami: studium przypadku

### **Introduction**

Glucocorticoids (GCs) take a vital part in metabolic adaptation due to their anti-inflammatory and immune-suppressive effects [11]. They are commonly used to treat numerous conditions and, in some cases, they require long-lasting administration.

Prolonged glucocorticosteroid use may lead to various adverse side effects. One of them are skin-related complications [4]. Glucocorticosteroid-induced skin atrophy is the thinning of the skin and subcutaneous tissues as a consequence of a prolonged GC use [8]. In this paper, we described a patient with the loss of skin thickness and increased skin fragility causing subcutaneous hematomas after corticosteroid treatment.

### **Case report**

72-year-old patient with a diagnosed genetic disease, alpha-1 antitrypsin deficiency, came to her primary care center for a routine check-up. She reports a declining health condition characterized by decreased physical capacity. The key concern is that

the patient is experiencing recurrent formation of subcutaneous hematomas. In her condition, those hematomas form very easily, even by a slight touch, are very painful, and extremely hard to heal.

The alpha-1 antitrypsin deficiency symptoms began with respiratory problems during the patient's menopause when she was 46 years old. She complained of fatigue, shortness of breath, and reported not being able to get on a bus.

The patient was diagnosed with a severe form of chronic obstructive pulmonary disease (COPD) (group D with an emphysema phenotype) with severe obstructive sleep apnea. The conducted tests confirmed alpha-1 antitrypsin deficiency. The patient underwent fundoplication of the left lung when she was 50 and 5 years later – of the right lung. Preliminary tests necessary for the qualification for lung transplantation were carried out. While waiting for the transplant, chronic steroid therapy was initiated in order to slow down disease progression.

Meanwhile, the patient developed depression. She is under constant psychiatric care and has been taking antidepressants systematically.

When the patient was 69, she underwent a cataract surgery in both eyes. Since then, she has had visible bruises/brown patches, redness and swelling around the eyes which, due to the regular steroid use, are visible till this day.

Further into the disease process, in the result of chronic steroid therapy, the patient developed diabetes. She stated that since the introduction of steroid therapy, she noticed a very significant decline in her immunity which resulted in two shingles infections. In 2022, the patient was hospitalized due to erysipelas and contracted COVID. In the result of secondary immunodeficiencies, she was hospitalized for immunoglobulin administration.

At the age of 70, the patient began to feel tingling and numbness in her lower limbs. The examination showed occlusion of the popliteal artery and anterior tibial artery. For this reason, unblocking and percutaneous transluminal angioplasty (PTA) of aorta, iliac, femoral, and popliteal arteries were performed together with the implantation of stents.

The patient reported frequent appearance of subcutaneous hematomas and petechiae, which in her case were wide and intensely purple-red (Figures 1–3).

**Figure 1.** Photo of the patient's left forearm, showing classic signs of skin atrophy and fragility often associated with prolonged systemic or topical glucocorticoid therapy. The skin is significantly thinner and translucent, due to which the underlying vasculature is prominently visible – a common side effect of chronic glucocorticoid use resulting from inhibited collagen synthesis. Large purpuric patches, or ecchymoses, can be observed, particularly on the mid-forearm. These bruises indicate subcutaneous bleeding due to capillary fragility, which is a symptom of steroid-induced skin changes. Glucocorticoids weaken the structural integrity of blood vessels and dermal

tissue, making the skin prone to bruising even with minor trauma. There are also several white, linear (pseudo) scars across the forearm, likely resulting from previous superficial injuries that healed poorly due to impaired fibroblast function. These scars are characteristic of dermatoporosis, a syndrome of extreme skin fragility, which is exacerbated by long-term GC use. Additionally, the skin appears dry and xerotic, with superficial fissures and wrinkles indicating compromised epidermal barrier function. Superficial abrasions and punctate lesions near the lower portion of the arm highlight the vulnerability to trauma and poor wound healing commonly observed in patients undergoing chronic glucocorticoid therapy.



*Fig. 1.*



*Fig. 2.*



*Fig. 3.*

**Figure 2 and Figure 3.** These images display the patient's lower limbs with severe dermatological complications from prolonged glucocorticoid therapy. Both legs exhibit extensive skin atrophy, leading to marked thinning and fragility. We can observe multiple subcutaneous hematomas of various sizes and dark discoloration, likely resulting from minor trauma due to the skin's reduced resilience. There is significant hyperpigmentation, scarring, and visible subdermal vascularization, reflecting chronic damage. Additionally, scattered erosions and scaly patches suggest compromised skin integrity and impaired healing capacity, which further complicates management and patient comfort.

The patient described her skin as thin and parchment-like, a symptom that appeared after the postmenopausal period. The patient emphasized that the symptoms started to get worse about 2 years ago, when they began to appear in her lower limbs. She stated that the black, large, intense bruises were the result of accidental impacts. The patient's skin was very sensitive and even painful to touch. She reported that she did not use

a towel to dry her wounds so as not worsen their condition. She needed to apply topical antibiotics which contained neomycin, bacitracin, and polymyxin. The patient related that when the skin was lightly hit or irritated, bruising and petechiae accompanied by intense pain would appear.

## Discussion

Glucocorticosteroids have been used in medicine for years. Unfortunately, they are sometimes misused and often administered in excessive doses or for extended periods. This can lead to side effects some of which may be quite severe [1]. Our principal focus was the management of skin complications.

According to research performed in Britain, including two reports submitted to the Committee on Safety of Medicines, high doses of inhaled corticosteroids or prednisolone have been linked to side effects such as skin thinning and an increased occurrence of purpura. Results from the clinical observations show that prolonged intake of prednisolone and inhaled corticosteroids cause reduced skin thickness in various areas of the body (hand, arm, buttocks). However, the group treated with low-dose inhaled corticosteroids for a prolonged period did not exhibit significantly thinner skin than the controls at any site. Purpura was markedly more common in the high-dose inhaled corticosteroid and systemic steroid groups, while the long-term low-dose inhaled corticosteroid group did not exhibit a significant increase in purpura compared with the controls. [1] Furthermore, the final and most dangerous stage of the thinning of the skin and subcutaneous tissue is skin atrophy leading to necrosis [10].

Management of changes as advanced and extensive as those observed in our patient, considering her age and comorbidities, is challenging. Improving the quality of life and reducing pain are crucial. Reversing the changes at this stage is very difficult, if not impossible. Another issue is the potential withdrawal or reduction of steroid dosage in such an advanced stage of COPD. Lower doses may help reduce the severity of symptoms. [2]

For patients who developed skin complications due to long-term glucocorticosteroid use, high-frequency ultrasonography (HFUS) imaging may be an option [12]. Regarding skin protection against the formation of bruises, there is no solid evidence or guidelines in the sources available to us. It is recommended to use topical products containing ceramides and hyaluronic acid [3, 5]. Hematomas usually resolve on their own, but if they are large or cause skin damage, they should be surgically removed. Additionally, cold ice packs may be applied. Arnika, vit. K8, bromelanin can also help. As far as laser treatment is concerned, pulsed dye light is used [6, 9] The use of retinoic acid to prevent post-steroid changes has also been researched, but these studies

were conducted on mice, and there is no evidence supporting the effectiveness of retinoic acid in humans [7].

## Conclusions

Generalized skin atrophy is the principal cutaneous side effect of prolonged GC use. The condition is characterized by increased skin and dermal vessels vulnerability to minor trauma leading to hematomas and steroid purpura. Atrophic skin may lead to the creation of non-healing wounds. The management of patient with steroid-induced skin atrophy is a major challenge for physicians.

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### Conflict of interest:

The author declares that there are no conflicts of interest.

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**ABSTRACT:**

This case study focused on a 72-year-old woman with glucocorticosteroid-induced skin complications triggered by therapy for chronic obstructive pulmonary disease (COPD). She suffers from severe skin thinning, resulting in subcutaneous poorly-healing hematomas caused by minor impacts. Its management is complex due to the patient's age and comorbidities, which underscores the need for improved approaches to skin preservation in steroid-treated patients.

**KEYWORDS:** glucocorticosteroid-induced skin complications, skin atrophy, steroid complications, subcutaneous hematomas

**STRESZCZENIE:**

Opis przypadku 72-letniej pacjentki z powikłaniami przewlekłej sterydoterapii w postaci ciężkiego ścieńczenia skóry prowadzącego do powstawania trudnych do wyleczenia. Sytuacja wymaga złożonego podejścia, uwzględniającego wiek pacjentki, jej stan oraz liczne choroby współistniejące.

**SŁOWA KLUCZOWE:** skórne powikłania sterydoterapii, zanik skóry, powikłania sterydoterapii, krwiaki podskórne