PATIENT WITH CHRONIC LYMPHEDEMA SECONDARY TO SKIN TUBERCULOSIS

VIRGIL PĂTRAȘCU*, LILIANA GABRIELA GEOLOAICA*, RALUCA NICULINA CIUREA**

Summary

Introduction. *Lymphedema is an excessive regional interstitial accumulation of protein-rich fluids. It can be primary, mainly caused by congenital hypoplasia (Meige's disease) or lymphatic vessel agenesis (Milroy's disease). Infections, malignancies, chronic venous stasis, ionizing radiation, obesity, and congestive heart failure are common causes of secondary lymphedema. Although cutaneous tuberculosis may be accompanied by limgangitis, its association with chronic lymphedema is rarely mentioned in the literature.*

Case report. *A 70-year-old man, attended the Dermatology Clinic due to the appearance of permanent, indurated and infiltrated edema of the right lower limb, with translucent papules on the skin. The patient also presented at the level of the right calcaneal region a hyperkeratotic lesion, 1.5 cm in diameter, with an ulcerated center (the clinical appearance suggests a tuberculosis verrucosa cutis). From the medical history we highlight that, 7 years ago, after a sting in the right calcaneal region, an abscess formed at the site of the sting, which was curetted in the Surgery Department, but which recurred. After about 6 months, the right lower limb began to grow in diameter due to significant edema. For chronic lymphedema, the patient was treated with Detralex, Pentoxi Retard, Vessel Due F prior to hospitalization, with no notable results. The histopathological examination pleaded for the diagnosis of cutaneous tuberculosis. Specific treatment with tuberculostatics (Isoniazid 300 mg, Rifampicin 600 mg, Pyrazinamide 2000 mg, Ethambutol 1600 mg, 7/7) was initiated, with a duration of 9 months, the evolution being favorable with the disappearance of the verrucous lesion from the right calcaneus region, with decreased lymphedema and disappearance of papules in the right lower limb.*

Discussions. *Tuberculosis verrucosa cutis (TVC) is the most common form of exogenous paucibacillary tuberculosis. It is the result of primary inoculation in previously tuberculin-sensitive individuals who maintain moderate to high immunity to M. tuberculosis. It is either self-inoculation or heteroinoculation following an accidental or professional contact. Secondary bacterial infection and chronic lymphedema are possible complications of extensive lesions that usually affect the extremities. TVC can persist for many years if not treated properly. Usually, there is a favorable response to antituberculosis therapy, as in our case.*

Conclusions. *Chronic lymphedema associated with tuberculosis verrucosa cutis can be cured by long-term treatment with tuberculostatics. Early diagnosis and treatment of cutaneous tuberculosis are essential to reduce complications.*

Keywords: *Chronic lymphedema, cutaneous tuberculosis, diagnosis, treatment.*

Received: 9.12.2020 *Accepted:18.01.2021*

* Dermatology Department, Emergency County Hospital, Craiova, University of Medicine and Pharmacy of Craiova, Romania.

** Pathology Department Emergency County Hospital, Craiova, University of Medicine and Pharmacy of Craiova, Romania..

Introduction

Lymphedema is an excessive regional interstitial accumulation of protein-rich fluids. It can be primary or secondary. Congenital hypoplasia (Meige's disease) and lymphatic vessel agenesis (Milroy's disease) are the main causes of primary lymphedema. Infections, malignancies, chronic venous stasis, ionizing radiation, obesity, and congestive heart failure are common causes of secondary lymphedema. [1]

Although cutaneous tuberculosis may be accompanied by limgangitis, its association with chronic lymphedema is rarely mentioned in the literature.

Case Report

A 70-year-old man, residing in a rural environment, presented with permanent, indurated and infiltrated edema of the right lower limb, with translucent papules on the skin (Fig. 1), with onset about 7 years ago. The patient also presented at the level of the right calcaneal region a hyperkeratotic lesion, 1.5 cm in diameter, with an ulcerated center (Fig. 2) (the clinical appearance suggests a tuberculosis verrucosa cutis).

History: The patient affirmed that, 7 years ago, after a sting in the right calcaneal region, an abscess formed at the site of the sting, which was curetted in the Surgery Department, but which recurred. After about 6 months, the right lower limb began to grow in diameter with significant edema, which initially improved in clinostatism. Later the edema became permanent, with infiltrated skin covered by translucent papules. Initially considered as chronic lymphedema, he was recommended treatment with Detralex, Pentoxi Retard, Vessel Due F, with no notable results.

Personal medical history: Cholecystectomy in 2013, Right clavicular fracture in 2014.

Objective examination: Phototype III, normal weight, BMI 23, translucent papules on the right lower limb with indurated edema, a hyperkeratotic lesion, 1.5 cm diameter, rough to the touch, with central ulceration, matte, thickened nails, reduced mobility in the right ankle joint, arterial pulse difficult to perceive in

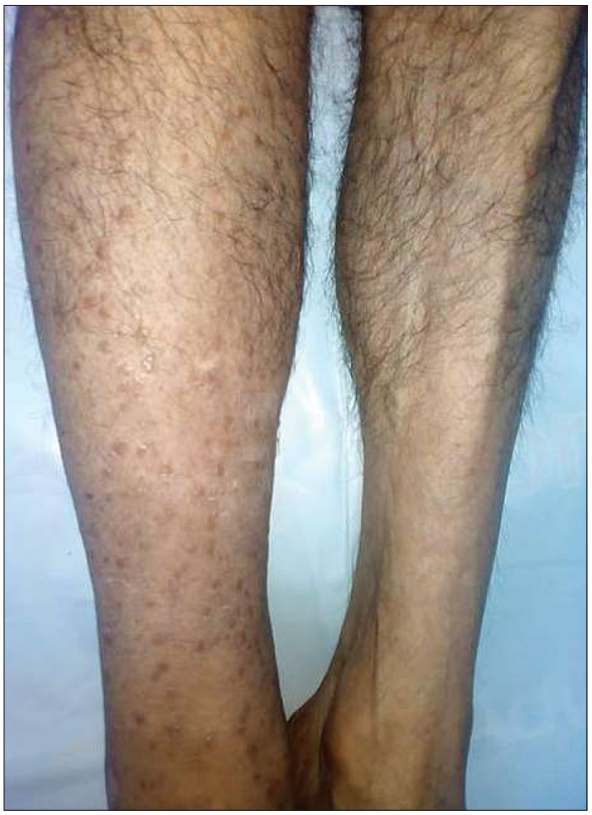

Figure 1. Significant edema in the right lower limb, with the skin covered with translucent papules

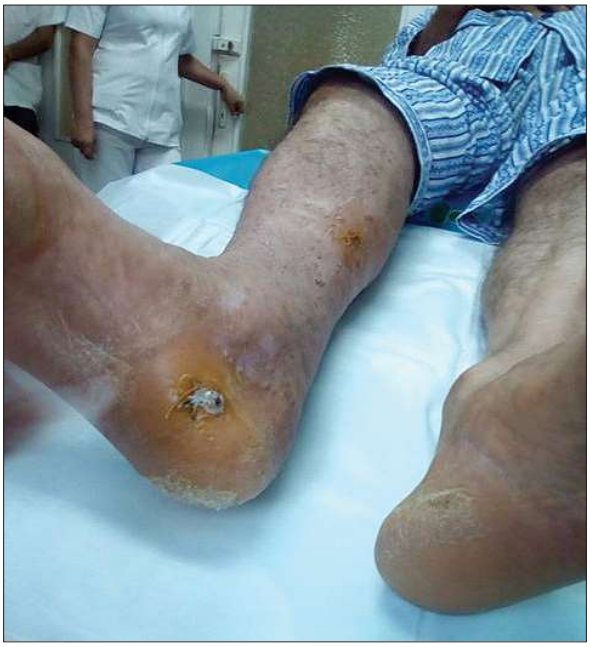

Figure 2. Keratotic lesion, with central ulceration, located in the right calcaneal region

the right dorsalis pedis artery. Post-fracture deformity of the right clavicle.

We performed a biopsy of a skin fragment from the right leg, respectively the right calcaneal region, and the *histopathological examination* pleaded for cutaneous tuberculosis. (Fig. 3, 4)

Chest X-ray: left apico-subclavicular calcified fibronodular sequelae. Cord within limits.

Direct bacteriological examination of the sputum and Ziehl Neelson staining were negative.

Echo Doppler: there are no signs of deep or superficial venous thrombosis of the lower limbs, without deep venous dilatations of the legs, edema present in the subcutaneous adipose tissue of the lower limb, visible to the level of the deep fascia (most likely lymphatic).

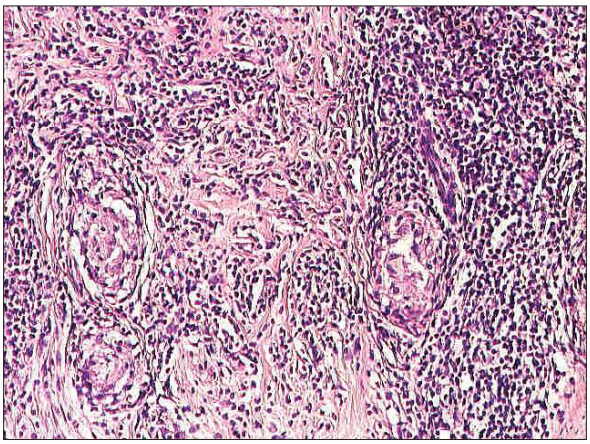

Figure 3. Giant-cell epithelioid granulomas, col. HE, x100

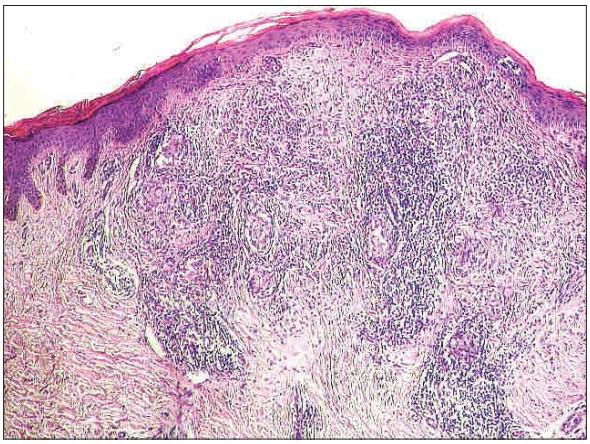

Figure 4. Epidermis with acanthosis, giant cell epithelioid granulomas, col. HE, x100

Ultrasound of the soft parts of the groin and right popliteal region: without inguinal lymphadenopathy or in the right popliteal space.

Laboratory tests: No leukocytes: 10.24 * 10^3 / microL, ESR 44 mm / h. The rest of the tests (GOT, GPT, GGT, glucose, urea, creatinine, summary urine test) were within normal limits. QuantiFERON TB test was positive.

Based on the case history, on the clinical examination and on the histopathological findings, the diagnosis of ***Chronic lymphedema of the lower limb stage III starting point cutaneous tuberculosis in the calcaneal region*** was supported.

We initiated specific treatment with tuberculostatics (Isoniazid 300 mg, Rifampicin 600 mg, Pyrazinamide 2000 mg, Ethambutol 1600 mg, 7/7) with a duration of 9 months, the evolution being favorable with the disappearance of the verrucous lesion from the right calcaneus (Fig. 5), with decreased lymphedema and disappearance of papules in the right lower limb. (Fig. 6)

Discussions

Lymphedema is an abnormal collection of protein-rich fluids in the interstitium that results from obstruction of lymphatic drainage. Lymphatic obstruction increases the protein content of the extravascular tissue, with subsequent water retention and soft tissue edema. The extravascular growth of proteins stimulates the proliferation of fibroblasts and the development of a firm edema of the affected extremity. Fibrosis also obstructs the lymphatic ducts and increases the concentration of proteins in the tissues, continuing this cycle. Lymphedema most commonly affects the extremities, but can, depending on the cause, involve the face, trunk or genitals. [2]

1. Primary form - is caused by abnormalities of the lymphatic system, although not always clinically evident from birth: congenital lymphedema (Milroy's disease), lymphedema praecox (Meige's disease), lymphedema tarda. [1]

Primary lymphedema can be present in the clinical aspect of the following syndromes: Turner syndrome, Noonan syndrome, lymphangiectasis-lymphedema syndrome (Hennekam syndrome), cholestasis-lymphedema

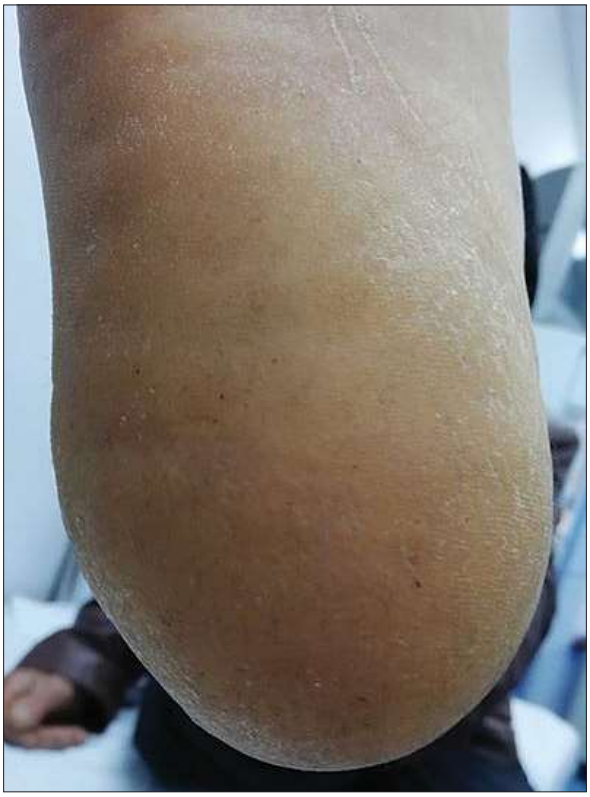

Figure 5. Clinical appearance of the calcaneal region, with the disappearance of the verrucous formation, after treatment with tuberculostatics

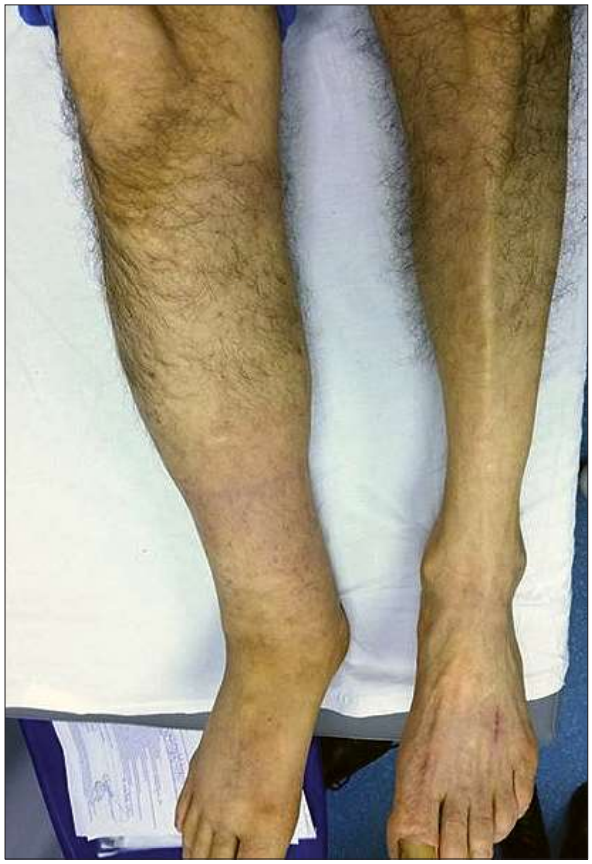

Figure 6. Clinical appearance of the right lower limb after treatment with tuberculostatics

syndrome (Aagenaes syndrome), microcephaly-lymphedema syndrome, dysplasia and dysplasia - lymphedema - telangiectasias. [3]

2. ***Secondary form*** - occurs due to an obstruction of lymphatic flow, found in: filariasis, silicosis, podoconiosis (occurs in farmers who walked barefoot on red volcanic soil, commonly found in Ethiopia), post-surgical (mastectomy), fibrosis secondary to chronic infections (TB), complication of a non-Hodgkin's lymphoma, morbid obesity, after circumcision (penile elephantiasis). [4]

The parasite Wuchereria bancroft -filariasis- is the major cause of secondary lymphedema. The parasite is transmitted by mosquito bites and affects millions of people in Africa, Asia, Central America and South America. [5]

Another common cause of secondary lymphedema is the combination of surgery and radiation therapy, used in breast cancer, but any surgery that involves the removal of lymph nodes or damage to the lymph vessels can increase the risk of lymphedema. Combination with radiotherapy increases the risk of lymphedema due to scarring and tissue fibrosis. [6]

Other causes of lymphedema are: morbid obesity [7], trauma, varicose vein surgery, congestive heart failure, portal hypertension, lipectomy, burns. Recurrent episodes of cellulitis and streptococcal lymphangitis have also been reported as causes of lymphedema.

A link has been established between peptic adrenomedullin deficiency and secondary lymphedema. [8]

The case of a woman with monoclonal gamapathy and rapidly progressive lymphedema has been described. [9]

Clinical aspects: the first symptom of lymphedema is edema of the affected area, most commonly in the distal extremities. Over time, fibrosis develops in the subcutaneous fat and edema progresses. Patients present with erythema of the affected area and thickening of the skin. The Kaposi-Stemmer sign is positive (infiltration of the skin of the toes, with the impossibility of pleating on the dorsal face). [10]

Elephatiasis nostra verruccosa has been described, a chronic form of lymphedema of non-filarial etiology, presenting with papillomatous hyperkeratotic plaques, covered with crusts or with clear or yellowish exudate. Cracks, ulcerations, lymphoids can also be observed.

Wart-shaped xanthomas have also been described in association with lymphedema. [11]

Histopathological examination, without always being necessary, reveals hyperkeratosis with areas of parakeratosis, acanthosis and diffuse dermal edema, with dilated lymphatic spaces. In chronic lymphedema there are marked fibrosis and foci of inflammatory infiltrate.

High frequency ultrasound, isotopic lymphoscintigraphy, scanner, MRI can help establish the diagnosis and etiology.

The evolution and prognosis depend on the chronicity of the lymphedema, on the complications (infectious, neoplastic, disimmune) and on the underlying condition.

Patients with chronic lymphedema with a 10-year history have a 10% risk of developing lymphangiosarcoma, an aggressive condition that requires radical amputation of the limb and has a poor prognosis. [13] Stewart-Treves syndrome is an endothelial sarcoma developed on a chronic lymphedema, classic on a thick arm after mammectomy. It occurs in 0.3% of breast cancer cases and occurs on average 10 years after mammectomy. At the level of the arm, on the background of chronic lymphedema, small infiltrative, blue-violet nodules develop, which can be confused with the lesions of Kaposi's disease. [3] Other neoplasms associated with chronic lymphedema are: squamous cell carcinoma, Kaposi's sarcoma, B-cell lymphoma, malignant fibrous histiocytoma. [14, 15]

Treatment. There is no therapy to cure lymphedema, but certain measures can relieve symptoms and prevent complications.

The goal of lymphedema therapy is to restore function, reduce physical and psychological distress, and prevent complications. Initiation of treatment should be early before irreversible fibrosclerotic changes occur. [16, 17]

In secondary lymphedema, removing the cause is the right attitude.

Treatment methods:

- reduction of edema through: physical exercises for lymph drainage, compressive bandages, massage, pneumatic compression;
- surgical treatment, depending on the location and cause of lymphedema: lymphatic-venous anastomosis, omental transposition, buried dermal flaps, entero-mesenteric bridge, lymphangioplasty;
- drug treatment: benzopyrines (coumarin and flavonoids) bind to accumulated interstitial proteins, inducing macrophage phagocytosis and proteolysis. The resulting protein fragments pass more easily into the venous capillaries and are eliminated by the vascular system [18-22]; Oral retinoids may be a treatment for chronic lymphatic changes, including elephantiasis. They helps normalize keratinization and reduce inflammatory and fibrotic changes [23,24]; in patients with recurrent lymphangitis or cellulite, penicillin, cephalexin, erythromycin are used [25];
- topical emollients, keratolytics, retinoids can be applied;
- gene therapy is currently a hope for primary lymphedema. Administration of VEGF-C (the most promising molecule in primary or secondary lymphedema) induces an effect of increasing cutaneous lymphatic vessels in mice. [3]

Tuberculosis verrucosa cutis (TVC) is the most common form of exogenous paucibacillary tuberculosis. It is the result of primary inoculation in previously tuberculin-sensitive individuals who maintain moderate to high immunity to M. tuberculosis. [26]

It is either self-inoculation - lesions on the back of the hands, after wiping the sputum containing Koch's bacilli, or heteroinoculation following an accidental contact, like our patient, or professional (butchers, veterinarians,

stablemen, pathologists). In the tropics, it is common in children walking barefoot on the soil contaminated with sputum from patients with pulmonary tuberculosis. [27]

The lesions are usually solitary, painless, predominating on the fingers or toes. [28, 29] It begins as erythematous papules, surrounded by an inflammatory halo, which evolves as warty, asymptomatic plaques, 1 to 5 cm in size. [30] They grow by peripheral extension, sometimes accompanied by central atrophy. They can rarely ulcerate. [31]

The diagnosis is based on the history and evolution of the disease, the clinical appearance, the histological characteristics and the mycobacterial culture of the lesion.

The histopathological examination reveals:

- hyperkeratosis and acanthosis, epidermal papillomatosis;
- dense dermal infiltrate with neutrophils, lymphocytes and giant cells arranged in the form of well-formed tuberculous granulomas; bacilli are rarely seen, and caseous necrosis is rarely present. [32]

The case reports in the literature do not argue for the current use of the PCR reaction for the detection of M. tuberculosis in tuberculosis verrucosa cutis. In cases for which the clinician has a strong suspicion, but the results of laboratory tests are negative, it is possible to use the response to antituberculosis medication as a diagnostic criteria. [33, 34] A study of patients with equivocal laboratory results, noted a 100% clinical improvement in all patients who took antituberculosis medication for 20 days and it was proposed that the response to treatment within 4 weeks could be used to support the diagnosis. [35]

TVC can persist for many years if not treated properly. Secondary bacterial infection and chronic lymphedema are possible complications of extensive lesions that usually affect the extremities. [36]

Usually, there is a favorable response to antituberculosis therapy, which we also obtained in the present case. The most commonly used antituberculosis chemotherapeutics are Rifampicin, Isoniazid, Pyrazinamide, Ethambutol and Streptomycin lasting 6-9 months. Patients with immunosuppression are treated for 12 months. Doses are adjusted for body weight. Daily dose treatment is more effective than discontinued treatment.[37]

In 2019, in India, a case of chronic lymphedema with elephantiasis [38] of the left lower limb was described in a 70-year-old man and the presence of a verrucous plaque in the left ankle, which at the histopathological examination was diagnosed as TVC. The patient underwent antituberculosis therapy. He was also recommended pneumatic compression stockings for lymphedema, along with regular limb massage and physiotherapy. He obtained a good response to therapy, with the gradual improvement of the verrucous plaque, as well as with the regression of lymphedema.

In November 2019, Ramesh A et al. performed a clinicopathological study of cutaneous tuberculosis over a period of one year:

- 60 patients, mostly men, were diagnosed with cutaneous tuberculosis, representing 0.11% of the total skin conditions;
- 26 patients were diagnosed with lupus vulgaris;
- 19 patients had TVC; in 89.47% of cases of TVC, and 53.84% of cases of lupus vulgaris, the lower extremities were involved;
- 11 patients had scrofuloderma;
- one patient had gumma tuberculosis and another patient had erythema induratum of Bazin;
- trauma was the main mechanism of production (35 cases).

Of the 60 cases, only 2 patients had cutaneous tuberculosis associated with lymphedema. Bacillary skin lesions responded well to antituberculous therapy, but with the persistence of lymphedema). [39]

Ramesh V. described 3 cases of lymphedema of the genital region secondary to cutaneous tuberculosis:

- the first case, with scofuloderma, was treated with rifampicin, pyrazinamide and ethambutol, with visible results after 3 months of treatment;
- the second case, also scrofuloderma, treated with antituberculosis therapy for 9 months, all signs of active disease dis-

appeared, without a significant decrease in genital edema;
- the third case, diagnosed with lupus vulgaris, with remission of lesions after 6 months of tuberculostatics, but the scrotal edema was slightly reduced in size. The medication was stopped and a year later the genitals looked normal.

In lupus vulgaris, the affected lymphatic circulation has been restored, but in scrofuloderma, greater tissue damage has resulted, with fibrosis and scarring. [40]

Conclusions

Chronic lymphedema associated with tuberculosis verrucosa cutis can be cured by long-term treatment with tuberculostatics.

Early diagnosis and treatment of cutaneous tuberculosis are essential to reduce complications.

Bibliography

1. Rockson, S. G. (2013). Diseases of the Lymphatic Circulation. Vascular Medicine: A Companion to Braunwald's Heart Disease, 697–708.
2. Connell F, Brice G, Jeffery S, Keeley V, Mortimer P, Mansour S. A new classification system for primary lymphatic dysplasias based on phenotype. Clin Genet. 2010 May. 77(5):438-52.
3. Virgil Pătrașcu. Boli dermatologice și infecții sexual-transmisibile. Ediția a V-a 2020, Vol II, pg 682-697.
4. Aghajan Y, Diaz J, Sladek E. Mysteriously puffy hand: puffy hand syndrome. BMJ Case Rep. 2018 Dec 22. 11 (1)
5. Babu S, Nutman TB. Immunology of lymphatic filariasis. Parasite Immunol. 2014 Aug. 36(8):338-46.
6. Lee R, Saardi KM, Schwartz RA. Lymphedema-related angiogenic tumors and other malignancies. Clin Dermatol. 2014 Sep-Oct. 32 (5):616-20
7. Fife C. Massive localized lymphedema, a disease unique to the morbidly obese: a case study. Ostomy Wound Manage. 2014 Jan. 60(1):30-5.
8. Nikitenko LL, Shimosawa T, Henderson S, Mäkinen T, Shimosawa H, Qureshi U, et al. Adrenomedullin Haploinsufficiency Predisposes to Secondary Lymphedema. J Invest Dermatol. 2013 Jan 30. [Medline].
9. Thielitz A, Bellutti M, Bonnekoh B, Franke I, Wiede A, Lotzing M, et al. Progressive lipo-lymphedema associated with increased activity of dermal fibroblasts in monoclonal gammopathy of undetermined significance: is there a causal relationship?. Lymphology. 2012 Sep. 45:124-9.
10. McGuinness, C. L., & Burnand, K. G. (2009). Lymphedema. Comprehensive Vascular and Endovascular Surgery, 862–875.
11. Stemmer R: Ein klinisches Zeichen zur fruh-und differential-Diagnose des Lymphodems. [A clinical symptom for the early and differential diagnosis of lymphedema], Vasa 5:261, 1976
12. Robert A Schwartz, William D James. Lymphedema. Dec 16, 2019 . Medscape. .
13. Azurdia RM, Guerin DM, Verbov JL. Chronic lymphoedema and angiosarcoma. Clin Exp Dermatol. 1999 Jul. 24(4):270-2.
14. Atillasoy ES, Santoro A, Weinberg JM. Lymphoedema associated with Kaposi sarcoma. J Eur Acad Dermatol Venereol. 2001 Jul. 15(4):364-5. [Medline].
15. Torres-Paoli D, Sanchez JL. Primary cutaneous B-cell lymphoma of the leg in a chronic lymphedematous extremity. Am J Dermatopathol. 2000 Jun. 22(3):257-60.
16. Mayrovitz HN. The standard of care for lymphedema: current concepts and physiological considerations. Lymphat Res Biol. 2009. 7(2):101-8. [Medline].
17. Pereira De Godoy JM, Amador Franco Brigidio P, Buzato E, Fátima Guerreiro De Godoy M. Intensive outpatient treatment of elephantiasis. Int Angiol. 2012 Oct. 31(5):494-9.
18. Grada AA, Phillips TJ (December 2017). "Lymphedema: Diagnostic workup and management". Journal of the American Academy of Dermatology. 77 (6): 995–1006.
19. Koul R, Dufan T, Russell C, Guenther W, Nugent Z, Sun X, Cooke AL (March 2007). "Efficacy of complete decongestive therapy and manual lymphatic drainage on treatment-related lymphedema in breast cancer". International Journal of Radiation Oncology, Biology, Physics. 67 (3): 841–6.

20. Szuba A, Achalu R, Rockson SG (December 2002). "Decongestive lymphatic therapy for patients with breast carcinoma-associated lymphedema. A randomized, prospective study of a role for adjunctive intermittent pneumatic compression". Cancer. 95 (11): 2260–7.
21. Granzow JW, Soderberg JM, Kaji AH, Dauphine C (April 2014). "Review of current surgical treatments for lymphedema". Annals of Surgical Oncology. 21 (4): 1195–201.
22. Narushima M, Mihara M, Yamamoto Y, Iida T, Koshima I, Mundinger GS. The intravascular stenting method for treatment of extremity lymphedema with multiconfiguration lymphaticovenous anastomoses. Plast Reconstr Surg. 2010 Mar. 125(3):935-43.
23. Feind-Koopmans A, van de Kerkhof PC. Successful treatment of papillomatosis cutis lymphostatica with acitretin. Acta Derm Venereol. 1995 Sep. 75(5):411. [Medline].
24. Boyd J, Sloan S, Meffert J. Elephantiasis nostrum verrucosa of the abdomen: clinical results with tazarotene. J Drugs Dermatol. 2004 Jul-Aug. 3(4):446-8.
25. Olszewski WL, Jamal S, Manokaran G, Tripathi FM, Zaleska M, Stelmach E. The effectiveness of long-acting penicillin (penidur) in preventing recurrences of dermatolymphangioadenitis(DLA) and controlling skin, deep tissues, and lymph bacterial flora in patients with "filarial" lymphedema. Lymphology. 2005 Jun. 38(2):66-80.
26. Santos JB, Figueiredo AR, Ferraz CE, Oliveira MH, Silva PG, Medeiros VL. Cutaneous tuberculosis: epidemiologic, etiopathogenic and clinical aspects - part I. An Bras Dermatol. 2014;89(2):219–228. doi:10.1590/abd1806-4841.20142334
27. Bravo FG, Gotuzzo E. Cutaneous tuberculosis. Clin Dermatol. 2007;25:173–180
28. Lai-Cheong JE, Perez A, Tang V, Martinez A, Hill V, Menagé Hdu P. Cutaneous manifestations of tuberculosis. Clin Exp Dermatol. 2007;32:461–466.
29. Sehgal VN, Sehgal R, Bajaj P, Sriviastava G, Bhattacharya S. Tuberculosis verrucosa cutis (TBVC) J Eur Acad Dermatol Venereol. 2000;14:319–321.
30. Gruber PC, Whittam LR, du Vivier A. Tuberculosis verrucosa cutis on the sole of the foot. Clin Exp Dermatol. 2002;27:188–191.
31. Lai-Cheong JE, Perez A, Tang V, Martinez A, Hill V, Menagé Hdu P. Cutaneous manifestations of tuberculosis. Clin Exp Dermatol. 2007;32:461–466.
32. MacGregor RR. Cutaneous tuberculosis. Clin Dermatol. 1995;13:245–255
33. Hsiao PF, Tzen CY, Chen HC, et al. Polymerase chain reaction based detection of Mycobacterium tuberculosis in tissues showing granulomatous inflammation without demonstrable acid-fast bacilli. Int J Dermatol. 2003;42:281-286.
34. Tan SH, Tan BH, Goh CL, et al. Detection of Mycobacterium tuberculosis DNA using polymerase chain reaction in cutaneous tuberculosis and tuberculids. Int J Dermatol. 1999;38:122-127.
35. Sehgal VN, Sardana K, Bajaj P, et al. Tuberculosis verrucosa cutis: antitubercular therapy, a well-conceived diagnostic criterion. Int J Dermatol. 2005;44:230-232.
36. Abebe F, Bjune G. The protective role of antibody responses during Mycobacterium tuberculosis infection. Clin Exp Immunol. 2009;157:235–243.
37. Ramesh V, Misra RS, Saxena U, et al. Comparative efficacy of drug regimes in skin tuberculosis. Clin Exp Dermatol. 1991;16:106-109.
38. Preema Sinha, Durga Madhab Tripathy, Subramaniyan Radhakrishnan, Biju Verghese, BS Sunita. Tuberculosis verrucosa cutis presenting with unilateral elephantiasis nostras verrucosa of the left lower limb: A rare entity. Department of Dermatology, Armed Forces Medical College, Pune, Maharashtra, India. 14-Jun-2019.
39. Ramesh A., Sampath V., Deepika S. A clinicopathological study on cutaneous tuberculosis in a tertiary care teaching institution. IJORD,Vol4, No 4, 2019.
40. Ramesh V. Lymphoedema of the genitalia secondary to skin tuberculosis: report of three cases. Genitourin Med. 1997 Jun;73(3):226-7.

Conflict of interest
NONE DECLARED

Correspondance address: Liliana Gabriela Geoloaica
University of Medicine and Pharmacy of Craiova, Romania
E-mail: liliana.geoloaica@yahoo.com