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Case Report
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Vein Thrombosis of Saphenous-Femoral Junction After Leg Lauromacrogol Foam Ultrasound Guided Percutaneous Sclerotherapy

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Abstract

Background: Lauromacrogol foam sclerotherapy is characterized by a high success rate in obliterating varicose veins and a low frequency of adverse effects. Most of these parts consist of minor effects, and few data are available about significant effects (e.g., vein thrombosis), pointing out the technical safety of ultrasound-guided foam sclerotherapy.

Case Presentation: a 78-year-old woman was evaluated for chronic vein disease; at ultrasonographic and Doppler scan (USDS), severe GSV dilatation and GSV reflux were documented in both legs below the knee. After meticulous anamnesis and physical examination, informed consent was obtained, and ultrasound-guided percutaneous polidocanol foam (one part of 2% lauromacrogol solution + one part of the air, mixed with Double Syringe System) sclerotherapy was performed in the right leg; best medical therapy was given after the procedure. After five days, USDS pointed out thrombosis extending to the thigh upper region to saphenous-femoral junctions, consisting of deep vein thrombosis. Appropriate anticoagulant therapy was promptly dispensed, and the patient had no aftermaths.

Conclusion: The prevalence of vein thrombosis after lauromacrogol sclerotherapy is unknown, and their correlation is uncertain, but, in our experience, it should be suspected in patients who referred lower limb pain after this procedure despite the best medical therapy dispensation.

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INTRODUCTION

Chronic venous disease (CVD) is a common condition in adults and older people: well-known risk factors include age, female gender, obesity, pregnancy, family history, and working tasks[1]. About 30% of the general population results affected by CVD, a quarter of them with symptomatic bilateral vein dysfunction[2]: not-treated CVD leads to increased microcirculation pressure in the lower limb, with edema production and inflammation triggering, consisting in neutrophils and macrophages invasion and Matrix Metalloproteinases (MMPs) activation, resulting in fat necrosis and connective disruptions[3, 4].

Finally, CVD-induced inflammation could lead to cutis wounds: to date, venous ulcers are an emerging problem involving 2-5% of the general population and representing 70-80% of the total skin ulcers[5]. In order to avoid CVD complications, medical therapy can be proposed in the early stage (bioflavonoids, sulodexide, elastic compression), and ablative therapy should be considered in advanced disease: this, conventional surgical ligation, venous stripping, subfascial endoscopic perforant surgery, endovenous laser ablation, radiofrequency ablation, and chemical sclerotherapy are today available[6, 7].

Chemical sclerotherapy with liquid compounds has been practiced for over 70 years: intraluminal effects consist of direct endothelial and vessel wall damage, thrombus generation, and its transformation in the fibrotic cord[8,9]. Currently, foam sclerotherapy is most used by phlebologists: in Europe, lauromacrogol, an alkyl polyglycol ether of Lauryl alcohol, is the most commonly used foam sclerosing compound[10, 8, 11]. Foam starting with a lauromacrogol solution could be obtained with a dedicated device such as Varisolve® or Double Syringes Systems and Tessari method, which consists of well-known home-made techniques. All these foams could be invalidated by inconstant bubble size and stability concerning pre-formulated lauromacrogol foam composition (e.g., Varithena®)[11]; however, a recent meta-analysis confirmed the efficacy and safety of every lauromacrogol foam composition in the treatment of varicose veins of lowers extremities[12].

Despite its low cost, lauromacrogol foam has discontinued utilization, and new evidence supports the implementation of foam techniques to reduce costs and budget impact on CVD[13]. Moreover, this chemical formulation is burdened by a few adverse effects, described in Literature: tachycardia, skin damage, blurred vision, dizziness, and headache (the latter only in patients affected by Patent Oval Foramen) described, but about phlebitis or DVT no data are available; however, it has known that air mix reduces adverse effects compared to CO_2 mix (3.1 vs 8.1% respectively)[14].

CASE PRESENTATION

A 78-year-old woman was evaluated for CVD because she complained about feeling heavy legs. A medical examination pointed out multiple venous buoys along the Great Saphenous Vein (GSV) courses in both legs and edema of both feet. An ultrasound-doppler enhanced scanning of both lower limb venous systems showed severe vein reflux (at Valsalva maneuver, reflux >2 sec) at femoral-saphenous junction and in the middle and lower parts of GVS, with GVS maximum

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diameter of 2.0 cm (normal value: <0.6 cm): reflux affected both GVSs, but right leg had eczematous skin and it was preferred to start treatment. The patient had an unremarkable previous medical history: she did not take medication and had never undergone surgery.

The treatment of choice was lauromacrogol foam obtained from 2% - lauromacrogol solution mixed with the correct volume of air with the Double Syringe System method. A high lauromacrogol solution was chosen due to the remarkable GVS diameter to obtain complete lumen obliteration. Informed consent was obtained, and an expert collaborator subjected the patient to lauromacrogol foam sclerotherapy under an oximeter and heart rate control. Lauromacrogol foam injection in the leg tract of the right GVS was performed under a sonographic guide: medial leg incontinent perforant veins were obliterated, too, as the ultrasound scan showed. No images of foam distribution in deep veins or the upper tract of GVS were described: foam distribution was mapped along GVS and arrived at the lower third of the thigh. To clarify the distribution of foam exposure results in veins, the resulting image contrast feature can be used[15]. The patient did not report pain during the procedure. The compressing dressing was packaged for the treated limb, and anticoagulant therapy (enoxaparin, 4000 UI/die) was administered for four days: sulodexide 250 UI/die was prescribed, starting from the fifth day after the procedure, for one month.

Follow-up was programmed on the fifth day after the procedure, consisting of compressing dressing change and sonographic assessment. On the programmed follow-up day, the patient complained about pain in the medial part of the upper third of the thigh. A painful palpable cord along the GVS course was noted upon medical examination. US scan revealed complete thrombosis of GVS extending to the upper third of the thigh to a femoral-saphenous junction, consisting of vein thrombosis (Figure 1).

Anticoagulant therapy was started (enoxaparin, 6000 UI/die), and thorax RX was performed in order to exclude pulmonary embolism, resulting in negative: patient-reported normal heart rate and denied pleural pain, shortness of breath or neurological symptoms. After 15 days, a US scan revealed slight parietal thickening in the upper right GVS, indicating thrombosis resolution.

DISCUSSION

Vein thrombosis is uncommon after lauromacrogol foam sclerotherapy, and its prevalence is unknown. In our experience, over more than two hundred sclerotherapy procedures, this is the first case: however, the best medical therapy (enoxaparin 4000 UI for four days and after sulodexide 250 UI for 30 days) had been administered in order to prevent hypothetical risk of thrombosis, and foam diffusion had seen to be limited to the lower third of the thigh, about 20-30 cm far to thrombus end. The presence of vein thrombosis in treated limbs could lead to a correlation between sclerotherapy and thrombosis, despite anticoagulant therapy, but further studies are needed to state if vein thrombosis could be considered a significant adverse effect of foam sclerotherapy.

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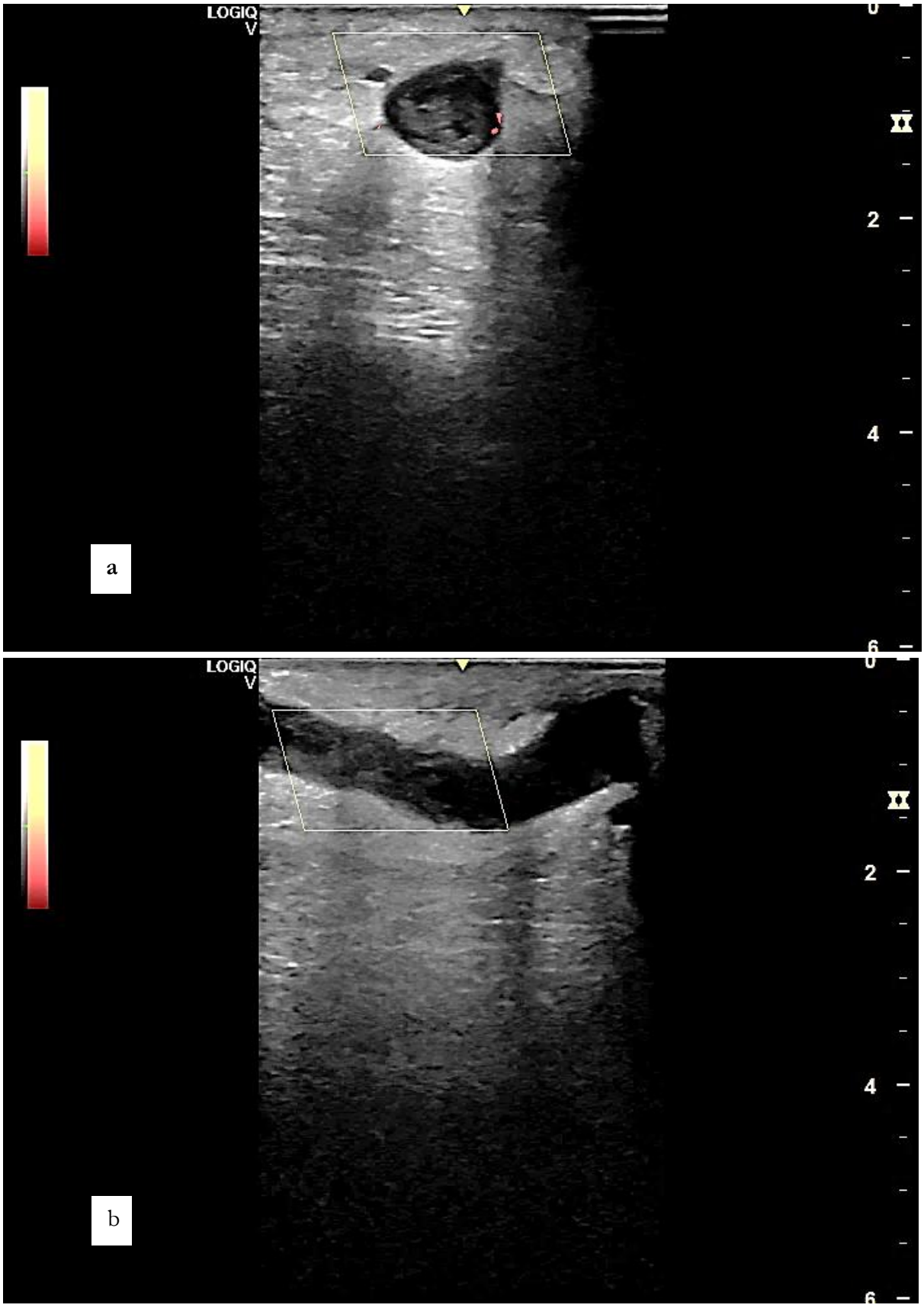

Figure 1: Complete thrombosis of saphenous-femoral junction after Lauromacrogol injection; a. coronal view, b. sagital view

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CONCLUSION

Vein thrombosis is very uncommon after Lauromacrogol foam sclerotherapy, and its prevalence is unknown but should be considered among the significant adverse effects.

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