

CASE REPORTS

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Case report
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SPONTANEUS RUPTURE OF THE LEFT VENOUS ANGLE ANEURYSM – A CASE REPORT

SPONTANA RUPTURA ANEURIZME LEVOG VENSKOG UGLA – PRIKAZ SLUČAJA

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Summary

Introduction. Upper extremity venous aneurysms and aneurysms of the neck are rare, unlike the lower extremity venous aneurysms. Only a few cases of upper extremity venous aneurysms have been described in the literature. The aim of the study was to find the best way to treat upper extremity venous aneurysms and the aneurysms of the neck region. **Case Report.** A 40-year-old female patient reported to the Emergency Center due to the swelling in the supraclavicular region. Color Doppler ultrasonography was performed and a saccular subclavian aneurysm was found, at the junction with the internal jugular vein, with signs of rupture presenting with locoregional hematoma spillage measuring 19 x 13 mm. Complete laboratory tests were performed, followed by computed tomography phlebography, where a partially thrombosed aneurysm was described in the angle between the internal jugular vein and subclavian vein, with a maximum diameter of 25 mm. The patient was hospitalized and treated conservatively. Six days after the onset of symptoms, magnetic resonance phlebography was performed, which did not show the previously described aneurysm of the left venous angle. Three months after the onset of symptoms, a control magnetic resonance phlebography was performed, which showed an aneurysm in the region of the junction of the left internal jugular vein and subclavian vein again, with a maximum diameter of 20 x 13 mm. **Conclusion.** Clinical examination and color Doppler ultrasound should certainly be the first-line of diagnosis, while magnetic resonance phlebography and computed tomography phlebography are the gold standard for aneurysm monitoring. Asymptomatic aneurysms and aneurysms with mild symptoms are best treated conservatively.

Key words: Aneurysm; Subclavian Vein; Phlebography; Tomography, X-Ray Computed; Magnetic Resonance Imaging; Signs and Symptoms; Diagnosis; Rupture

Sažetak

Uvod. Aneurizme vena gornjih ekstremiteta i regije vrata su retkost za razliku od aneurizmi vena donjih ekstremiteta. Samo nekoliko slučajeva aneurizmi vena gornjih ekstremiteta je opisano u literaturi. Cilj rada bilo je nalaženje načina lečenja venskih aneurizmi gornjih ekstremiteta i regije vrata. **Prikaz slučaja.** Pacijentkinja stara 40 godina javila se u urgentni centar zbog pojave otoka u supraklavikularnoj regiji. Urađena je dopler ultrasonografija, gde je opisana sakularna aneurizma potključne vene, neposredno pre spajanja sa unutrašnjom jugularnom venom, sa znacima rupture u vidu razlivenog hematoma dimenzija 19 x 13 mm. Urađena su kompletna laboratorijska ispitivanja, a potom i kompjuterizovana venografija gde je opisana parcijalno trombozirana aneurizma u uglu između unutrašnje jugularne vene i potključne vene, maksimalnog dijametra 25 mm. Pacijentkinja je hospitalizovana i konzervativno lečena. Šest dana od nastanka simptoma urađena je magnetno-rezonantna venografija, na kojoj nije bila prisutna ranije opisana aneurizma levog venskog ugla. Tri meseca od nastanka simptoma, kontrolna magnetnorezonantna flebografija je urađena, na kojoj je ponovo opisana aneurizma u regiji spoja unutrašnje jugularne vene i potključne vene, maksimalnog dijametra 20 x 13 mm. **Zaključak.** Prva linija u dijagnostici je svakako klinički pregled i Dopler ultrasonografija, dok za monitoring aneurizme magnetnorezonantna venografija i venografija kompjuterizovanom tomografijom predstavljaju zlatni standard. Asimptomatske aneurizme i aneurizme sa blagom kliničkom slikom najbolje je konzervativno tretirati.

Glavne reči: aneurizma; potključna vena; flebografija; CT; magnetna rezonanca; znaci i simptomi; dijagnoza; ruptura

Introduction

Upper extremity venous aneurysms and aneurysms of the neck region are rare, unlike the lower extremity venous aneurysms [1]. Only a few cases of venous aneurysms of the upper extremities are described in the literature [2–4]. Contrary to lower

extremity venous aneurysms, they are mostly asymptomatic and have mild complications [5]. Clinically, they are mostly painless non-pulsatile masses in the neck region that increase with Valsalva maneuver [1]. In addition to clinical examination, color Doppler ultrasound (CDUS), computed tomography (CT) phlebography and magnetic reso-

Abbreviations

CDUS	– color Doppler ultrasound
LMWH	– low molecular weight heparin
CC	– craniocaudal
LL	– latero-lateral
CT	– computed tomography
MR	– magnetic resonance

nance (MR) phlebography are also used in the diagnosis.

The complications are rare, and only a few cases with complications, including rupture or pulmonary thromboembolism, have been reported in the literature [6–8].

Currently, there is no clear algorithm for the treatment of symptomatic and asymptomatic upper extremity venous aneurysms. There are only recommendations for open surgical treatment of symptomatic aneurysms if the conditions are met. We recently treated a patient with a large symptomatic subclavian venous aneurysm, which forms the basis of this report.

Case Report

A 40-year-old female patient reported to the Emergency Center due to the appearance of edema in the left supraclavicular region. The edema appeared spontaneously the day before, without previous trauma and was not accompanied by other symptoms.

The patient presented with hypertension, without other comorbidities. She denied previous surgeries and central venous cannulation, as well as trauma in the left supraclavicular region.

During the examination, the patient was hemodynamically stable, conscious and communicative. Clinically, there was a soft edema in the left supraclavicular region, which was completely painless. During the Valsalva maneuver, there was a slight increase in the edema.

The CDUS was performed and a saccular subclavian venous aneurysm was found at the junction with the internal jugular vein, presenting with locoregional hematoma spillage measuring 19 x 13 mm (Figure 1).

Complete laboratory tests were performed, followed by CT phlebography (Figure 2), where a partially thrombosed aneurysm was described in the angle between the internal jugular vein and subclavian vein, with a maximum diameter of 25 mm. There was also a hematoma in the supraclavicular and left neck region and diffuse edema of subcutaneous adipose tissue. The neck structures were shifted to the right by about 3 mm, and the lumen of the trachea was normal.

The patient was hospitalized at the Vascular and Endovascular Surgery Clinic. Since the patient had no subjective problems other than edema, she was hemodynamically stable, and the laboratory findings were within reference limits, conservative treatment was initiated. The patient was prescribed anticoagulant therapy, prophylactic doses of low molecular weight heparin (LMWH), as well as analgesics, gastroprotective agents and infusion solu-

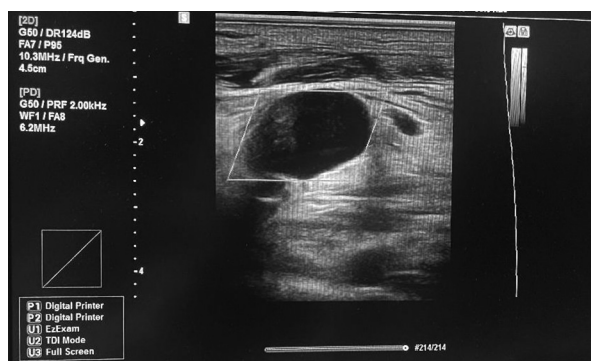


Figure 1. CDUS on the first day of the onset of symptoms – left subclavian venous aneurysm with hematoma
Slika 1. Dopler ultrasonografija prvog dana od nastanka simptoma – aneurizma leve potključne vene sa hematomom

tions. Two days later, a control CT scan was performed (Figure 3) and showed a reduction of the aneurysm to a maximum diameter of about 15mm, with complete reduction of the thrombotic mass with only the circulating lumen of the aneurysm. Significant regression of the locoregional hematoma spillage was also described, and the neck structures were less shifted.



Figure 2. CT phlebography two days after the onset of symptoms – a partially thrombosed aneurysm in the angle between internal jugular vein and subclavian vein, with a maximum diameter of 25 mm and hematoma of the supraclavicular and left neck region with a shift of the neck structures

Slika 2. Kompjuterizovana flebografija dva dana nakon nastanka simptoma – parcijalna tromboza aneurizme u uglu između unutrašnje jugularne vene i potključne vene, sa maksimalnim dijametrom od 25 mm i hematomom supraklavikularno u regije vrata sa leve strane, kao i dislokacijom struktura vrata



Figure 3. CT phlebography two days after the onset of symptoms - reduction of the aneurysm to a maximum diameter of about 15 mm, with a complete reduction of the thrombotic mass

Slika 3. Kompjuterizovana flebografija dva dana nakon početka simptoma – smanjenje aneurizme na maksimalni diameter oko 15 mm, sa kompletnom redukcijom trombotičnih masa

Six days after the onset of symptoms, MR phlebography was performed and it did not show the previously present aneurysm in the left venous angle



Figure 4. MR phlebography six days after the onset of symptoms – without previously described aneurysm of the left venous angle

Slika 4. Magnetno-rezonantna flebografija šest dana nakon početka simptoma – bez prethodno opisane aneurizme levog venskog ugla

(**Figure 4**). The patient was hemodynamically stable during the entire hospitalization, with clinically significant regression of the edema in the supraclavicular region. The patient was discharged for further home treatment six days after the onset of symptoms. After discharge, the patient was tested for thrombophilia, and it was confirmed that she was a heterozygous carrier of the V Leiden mutation.

Three months after the onset of symptoms, control MR phlebography was performed, which showed an aneurysm in the region of the junction of the left internal jugular vein and subclavian vein again, with a maximum diameter of 20 x 13 mm, craniocaudal (CC) x latero-lateral (LL), and a larger circulating lumen compared to the first CT finding (**Figure 5**). Considering that the patient did not have clinical symptoms at that time, and that there was no increase in mass in the supraclavicular region during the Valsalva maneuver, the decision was made to further continue conservative treatment.



Figure 5. MR phlebography three months after the onset of symptoms - aneurysm in the region of the junction of the left internal jugular vein and subclavian vein, with a maximum diameter of 20 x 13 mm (CC x LL)

Slika 5. Magnetno-rezonantna flebografija tri meseca nakon početka simptoma – aneurizma u regiji spoja leve unutrašnje jugularne vene i potključne vene, sa maksimalnim diameterom 20 x 13 mm (KK x LL)

Discussion

An aneurysm is a concentric or eccentric, permanent segmental enlargement of a blood vessel wall, at least 1.5 times its normal diameter [9]. Venous aneurysms are rare and the first was described in 1928 [10]. Yao et al. described three categories of venous aneurysms: congenital, traumatic and acquired [5]. Sometimes aneurysms occur spontaneously, of unclear cause, as in our case. Venous

aneurysms in the region of the neck and upper extremities are rare, and only a few cases have been described in the literature [6–8].

Most venous aneurysms are asymptomatic painless non-pulsatile masses which increase with Valsalva maneuver [1]. The differential diagnosis is quite broad and includes enlargement of lymphatic nodes, thyroid gland, cysts, lipomas, as well as malignancies and metastatic changes [11]. In our case, the aneurysm manifested as a non-pulsatile edema in the left supraclavicular fossa, painless on palpation.

Aneurysm in our patient was diagnosed only after the development of one of the most serious complications, rupture. In addition to rupture, complications include thrombosis or embolism, compression of surrounding structures and venous obstruction [11].

Unfortunately, in most patients, the diagnosis is made only after the development of some of the symptoms. There is no clear diagnostic algorithm for the diagnosis of venous aneurysms of the upper extremity and neck region. The most common and first-line diagnostic procedure is certainly the CDUS, while in case of complications, additional diagnostic procedures by means of CT phlebography, MR phlebography, and even invasive angiography are recommended.

There is currently no clear treatment protocol for venous aneurysms of the upper extremities and neck region. According to the available literature, some authors [3–5, 12] surgically treated aneurysms, while in a small number of cases they were treated con-

servatively [4]. Aneurysm resection theoretically eliminates the risk of serious complications, such as rupture and embolization. Some authors argue that asymptomatic aneurysms should always be operated, while other authors believe that surgery is necessary only in case of serious complications and development of symptoms. However, surgical treatment of venous aneurysms of the neck and upper extremities, due to the anatomical position, carries an increased risk of injury to surrounding structures. In our case, we decided for conservative treatment due to the localization of the aneurysm, increased risk of intraoperative injury to surrounding structures, as well as mild symptoms that resolved completely after conservative treatment. Unfortunately, we still do not have a large series of cases to show which type of treatment would be the most optimal.

Conclusion

Upper extremity venous aneurysms and aneurysms of the neck region are rare and they are mostly diagnosed only after the development of complications. Clinical examination and color Doppler ultrasound should certainly be the first-line of diagnosis, while magnetic resonance phlebography and computed tomography phlebography are the gold standard for aneurysm monitoring. Asymptomatic aneurysms and aneurysms with mild symptoms are best treated conservatively.

References

1. Sidawy AN, Perler BA. Rutherford's vascular surgery and endovascular therapy. 9th ed. Philadelphia: Elsevier; 2018.
2. Requeiro Mira F, Gablis Caravajal JM, Canto Armengod A. Thoracic venous aneurysms. Clinical observation. *J Cardiovasc Surg (Torino)*. 2002;43(4):527-9.
3. Schellhammer F, Wöbker G, Turowski B. Asymptomatic aneurysm of the subclavian vein. *Acta Radiol*. 2005;46(4):366-7.
4. Gillespie DL, Villavicencio JL, Gallagher C, Chang A, Hamelink JK, Fiala LA, et al. Presentation and management of venous aneurysms. *J Vasc Surg*. 1997;26(5):845-52.
5. McCready RA, Bryant MA, Divelbiss JL, Chess BA. Subclavian venous aneurysm: case report and review of the literature. *J Vasc Surg*. 2007;45(5):1080-2.
6. Modry DL, Hidvegi RS, LaFleche LR. Congenital sacular aneurysm of the superior vena cava. *Ann Thorac Surg*. 1980;29(3):258-62.
7. Sharma R, Ravi M, Unni TG. Primary fusiform superior vena cava aneurysm. *Cardiol Res*. 2017;8(4):176-8.
8. Torres Guzmán MD, Romero A. Subclavian vein aneurysm - case presentation and discussion: case 14459 [Internet]. 2017 [cited 2022 Sep 5]. Available from: <https://www.eurorad.org/case/14459>
9. Chaikof EL, Dalman RL, Eskandari MK, Jackson BM, Lee WA, Mansour MA, et al. The Society for Vascular Surgery practice guidelines on the care of patients with an abdominal aortic aneurysm. *J Vasc Surg*. 2018;67(1):2-77.e2.
10. Çolaklar A, Akkaya HE. Saccular aneurysm of the external jugular vein: an unusual cause of a neck mass. *Oman Med J*. 2019;34(5):456-9.
11. Drakonaki EE, Symvoulakis EK, Fachouridi A, Kounalakis D, Tsafantakis E. External jugular vein aneurysm presenting as a cervical mass. *Int J Otolaryngol*. 2011;2011:485293.
12. Elbastay A, Armon M. Subclavian vein aneurysm. *Eur J Vasc Endovasc Surg*. 2018;56(5):642.

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