

STROKE FOLLOWING VARICEAL SCLEROTHERAPY

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Abstract

Objective: Paradoxical embolism via a patent foramen ovale (PFO) has been identified as a potential risk factor for ischaemic stroke. Such occurrences are associated with risk factors for deep vein thrombosis (DVT), e. g. pregnancy, immobilisation, and surgery of the lower limbs.

Observation: A 54-year-old otherwise healthy female presented with acute onset motoric aphasia and brachiofacial right hemiparesis. The cranial computed tomography showed a left striatal ischaemic infarction. The patient's history revealed a variceal sclerotherapy with polydocanol 0,5% three days prior to the onset of symptoms. Echovist TCM doppler revealed a right-to-left shunt. A patent foramen ovale (PFO) was detected by transesophageal echocardiography. There was no evidence of DVT in bilateral lower-extremity venous duplex ultrasound scanning. Other potential risk factors of stroke including thrombophilia could not be identified. The patient was treated with a high dose regimen of heparin and a further anticoagulation treatment was recommended.

Conclusion: This case suggests a probable causal relationship between variceal sclerotherapy and paradoxical embolism resulting in a stroke. Variceal sclerotherapy might be a potential, but rare risk of embolism.

Key words: patent foramen ovale; paradoxical embolism; ischaemic stroke; variceal sclerotherapy; side effects

INTRODUCTION

The prevalence of patent foramen ovale (PFO) in the general population ranges between 1.6% and 34%. It occurs in a higher percentage in patients with otherwise unexplained cerebrovascular events than in control subjects. PFO has been identified as a potential risk factor for ischaemic stroke especially in younger patients and those with no other identifiable cerebrovascular risk factors.[8, 10, 11, 15] The mechanism is "paradoxical embolism" from a venous source due to deep venous thrombosis (DVT). However, phlebographic studies in patients with suspected paradoxical embolism showed a widely varying incidence of 0% [4, 12], 9.5% [12] and 57% [17] of DVT. The occurrence of paradoxical embolism is associated with risk factors for the formation of ve-

nous thrombosis, e. g. pregnancy, thrombophilia, immobilisation, long distance flights and surgery of the lower limbs. We present a patient with PFO and paradoxical embolism occurring after a variceal sclerotherapy.

CASE REPORT

A 51-year old otherwise healthy female was admitted six hours after acute onset of difficulties in speaking and a right hemiparesis. There was no patient's history of previous stroke, deep vein thrombosis, abortion, diabetes, migraine, cigarette smoking, alcohol abuse or hormon replacement therapy. Superficial varices (reticular veins and telangiectases) in the left calf and the hollow of the knee were repeatedly treated by intravenous injection of 0.5 ml 1% and 0.5% polydocanol (Aethoxysklerol®, Kreussler, Germany) 18 and 3 days ago, respectively. She had not worn compression bandage afterwards. There was no family history of stroke.

Neurological examination revealed a mild motor aphasia and mild right brachiofacial hemiparesis (NIHSS Score: 4). There was no evidence for a local necrosis or inflammatory reaction in the area of polydocanol injection. Laboratory tests revealed normal TSH, Hk, blood count, blood glucose profile, HbA1c, total cholesterol, LDL-cholesterol, triglycerids, APC ratio, Protein C, activated Protein S, Cardiolipin-IgG and IgM, homocysteine, negative Lupus-inhibitor, and only slightly decreased HDL cholesterol (1.3 mmol/l; normal value: > 1.5) and increased D-dimer (0.51 mg/l, normal value: < 0.19). The monitored mean arterial pressure was between 70 and 90 mmHg.

The repeated cranial computed tomography on the second day showed ischaemic stroke in the lenticulostriatal branches of the left middle cerebral artery involving the anterior crus of the internal capsule, the lentiforme nucleus and the caput of the caudate nucleus (Fig. 1). 24-hour Holter ECG showed normal sinus rhythm. Extra- and transcranial Doppler (ECD, TCD; I28XP/4 Computed Sonography Systems, Acuson, Germany) ultrasonography showed no haemodynamic relevant plaques or stenoses and a normal pulsatility index. Visible and audible evidence of 12 microembolic signals on contrast-enhanced TCD after intravenous application of D-galactose (Echovist®, Schering, Germany) and Valsalva ma-

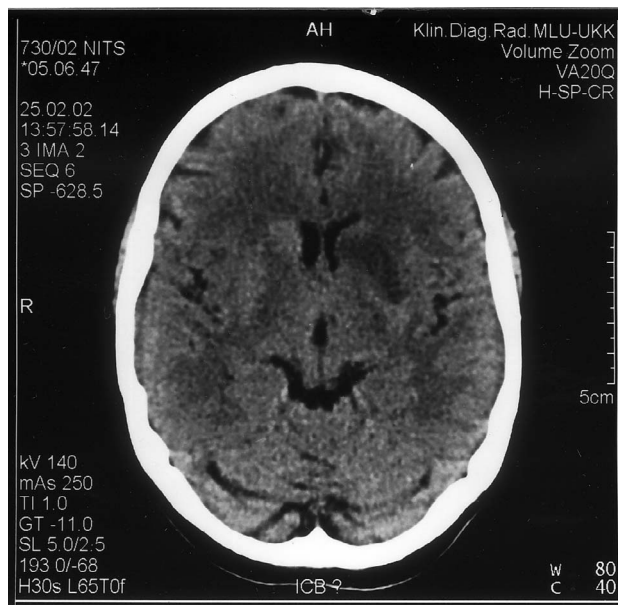


Fig. 1. Ischaemic stroke in the lenticulostriatal branches of the left middle cerebral artery involving the anterior crus of the internal capsule, the lentiforme nucleus and the caput of the caudate nucleus in cranial computed tomography.

noeuve suggested a right-to-left shunt. The suspected PFO could be confirmed by right-to-left shunt on transesophageal echocardiography with contrast injection (D-Galactose, Echovist®-300, Schering, Germany, 6Tv multiplane TEE probe, Vivid Five System, GE Vingmed Ultrasound, Norway, Fig. 2). There was no evidence of a DVT in bilateral lower-extremity venous colour coded duplex ultrasound examination.

The patient was admitted to late to perform systemic or local lysis with rt-PA. She received a high dose regimen of heparin under monitoring of partial thromboplastin time (1.5-2.0-times: 50'-60'), which later was changed to low dose warfarin (INR 2-3). She still had speech difficulties and a slight rightsided hemiparesis when she was discharged to a rehabilitation unit two weeks later.

DISCUSSION

This 51-year-old woman presented with an acute ischaemic stroke in the middle cerebral artery territory (occlusion of a lenticulostriatal artery). Elevated D-dimer indicated an embolic event. A right-to-left shunt due to a PFO could be diagnosed by Valsalva-maneuvre in TEE and TCD. A DVT could not be confirmed by bilateral lower-extremity venous duplex ultrasound scanning. However, the patients history suggested a causal relationship to sclerotherapy treatment three days prior to the ischaemic event.

Sclerotherapy is the treatment of choice for varicosity of side branches, reticular veins, and telangiectases. Intravenously applied substances as polidocanol produce a localized phlebitis that leads to the obliteration of the venous segment [14].

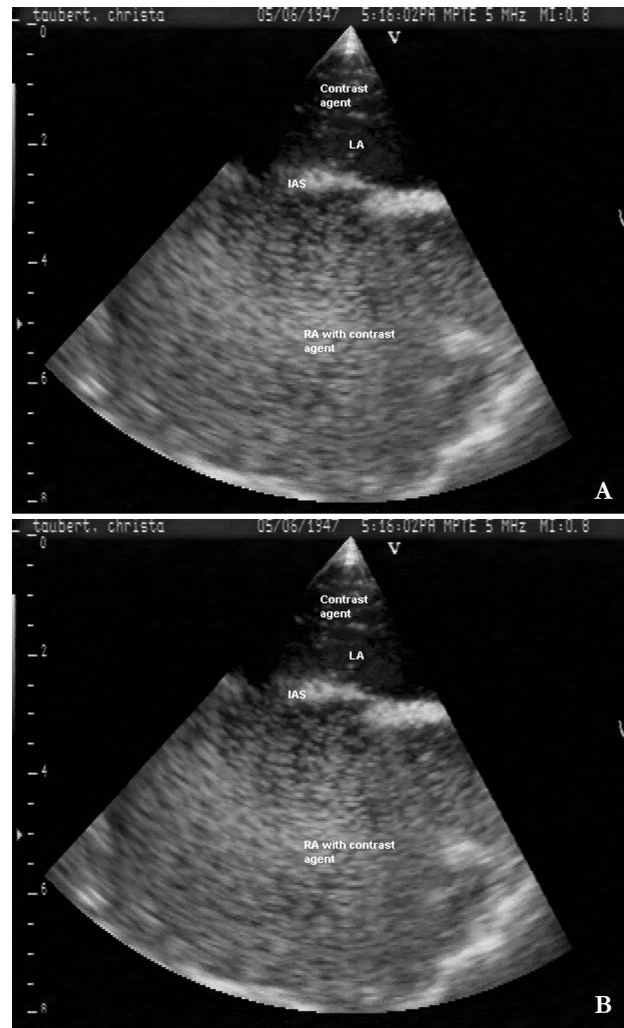


Fig. 2. Transesophageal echocardiography before (A) and after (B) application of contrast medium. (B) shows right-to-left shunt (IAS = interatrial septum, LA = left atrium, RA = right atrium).

Bohler-Sommeregger et al. (1992) demonstrated in two patients the existence of venae communicantes connecting intradermal venectases to the deep veins by venography.[3] The incidence of deep venous thrombosis after polidocanol treatment was reported to range between 0% and 0.14% in large groups.[5-7, 14, 16] Four cases of pulmonary embolism occurred after the treatment of leg veins by sclerotherapy, including small intradermal venectases.[2, 7, 16] Furthermore, pulmonary embolism from migration of sclerosing agent after sclerotherapy for esophageal varices and for a venous angioma was reported recently [9, 13]. An extended hypercoagulable state or the formation of small local transient thrombi after variceal sclerotherapy might be a possible explanation for the evolution of paradoxical embolism and stroke in this situation [1]. In our case no other contributory factor was found to trigger the complication.

While the definitive risk of a PFO for stroke in otherwise healthy younger patient is still point of discussion there is general agreement that additive thrombotic or hypercoagulable states potentiate this

risk. This case demonstrates an iatrogenic complication in a mainly cosmetic treatment. Patients undergoing variceal sclerotherapy should be informed about the potential, but rare risk of stroke in combination with an otherwise silent PFO.

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