

Coagulation abnormalities in adults with cryptogenic stroke and patent foramen ovale

Seemant Chaturvedi, Received 5 May 1998; received in revised form 23 June 1998; accepted 1 July 1998.

Abstract

A patent foramen ovale (PFO) is found by transesophageal echocardiography in one half of patients with cryptogenic stroke (CS). Coagulation abnormalities may promote paradoxical emboli in these patients. Seventeen patients were identified with PFO and CS. **Thirty-one percent of patients had hematologic risk factors for venous thrombosis.** These included abnormal activated protein C resistance and increased anticardiolipin antibodies. Patients with coagulation abnormalities and a PFO were three times as likely to be treated with warfarin compared to aspirin ($P<0.05$). Prothrombotic states are common in patients with PFO and CS and identifying these conditions may impact the choice of antithrombotic therapy.

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Incidence of extracerebral paradoxical embolisms in patients with intracardiac shunts.

Rigatelli G, Giordan M, Braggion G, Aggio S, Chinaglia M, Zattoni L, Milan T, Cardaioli P.

Abstract

BACKGROUND: Although extracerebral embolism accounts for 5-10% of all paradoxical embolisms, it still remains a ghostlike entity in cardiovascular pathophysiology. The aim of this brief report was to analyze the profile of patients with paradoxical extracerebral embolism and intracardiac shunts, and the role of shunt closure on the recurrence of extracerebral paradoxical embolism (EPE) in a population of patients evaluated for patent foramen ovale (PFO)/atrial septal defect (ASD) transcatheter closure. **METHODS:** From July 2003 to December 2006, 150 patients (mean age 51.4 \pm 15.1 years, range 13-78 years, M/F=49/101) were planned for transcatheter closure of PFO/ASD at our institutional program of Adult Congenital Heart Disease Management. Clinical history and medical records of all patients were reviewed searching for association of PFO/ASD, stroke, and presumptive EPE. **RESULTS:** Association of PFO with presumptive EPE was found in nine patients (6%, mean age 40.1 \pm 14 years, M/F=3/6). Five patients had ST-elevation myocardial infarction (mean value of troponin was 15.3 \pm 2.1 ng/ml), while four patients had inferior limb acute ischemia. In patients with coronary embolism, coronary angiography was performed immediately after chest pain onset revealing normal coronary artery and only a mild hypokinesia. In patients with peripheral acute ischemia, early (>4 h from symptoms onset) angiography demonstrated normal main peripheral vessel and an embolic closure of popliteal artery (one patient), distal tibial artery (two patients), or peroneal artery (one patient) that normalized with heparin therapy in a few hours except in one patient. Migraine with aura was present in seven of nine patients. Cerebral MRI revealed previous ischemic areas in four of nine patients. **Coagulation disorders were detected in six of nine patients.** Echocardiography demonstrated a large to medium PFO in seven patients and a cribriform ASD in two patients. **CONCLUSION:** Although a large study is required to assess optimal diagnosis and clinical implications of EPE, the clinical profile emerging from our study may help to identify some easy criteria of diagnosis in order to improve diagnosis and decrease the recurrence of such probably underestimated manifestations of PFO/ASD.

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Original Articles

Factor V Leiden and prothrombin gene mutation may predispose to paradoxical embolism in subjects with patent foramen ovale

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Abstract

The role of paradoxical embolism through patent foramen ovale as a mechanism of cryptogenic stroke is controversial. If a venous source of emboli is relevant, prothrombotic states should be associated with patent foramen ovale and cryptogenic stroke. We assessed the occurrence of several prothrombotic states (factor V Leiden, prothrombin G20210A, deficiencies in protein S, protein C and antithrombin, lupus anticoagulant, anticardiolipin antibodies, elevated factor VIII, resistance to activated protein C) and classical risk factors for venous thrombosis in 57 adult patients with cryptogenic stroke and patent foramen ovale and in 104 matched controls. Prothrombotic states [odds ratio (OR) 2.8; 95% confidence interval (CI), 1.2-6.5; $P = 0.021$], migraine with aura (OR 4.4; 95% CI 1.8-10.8; $P = 0.001$) and classical risk factors for venous thrombosis (OR 2.5; 95% CI 1.1-5.7; $P = 0.037$) were independent risk factors for cryptogenic stroke. **In particular factor V Leiden or prothrombin G20210A associated with cryptogenic stroke ($P = 0.022$) whereas other coagulation abnormalities did not ($P = 0.140$).** Among the patients with prothrombotic states, Valsalva manoeuvre was common at onset of stroke. Our results support the possibility of paradoxical embolism behind strokes in patients with patent foramen ovale.