

Embollic Stroke Caused by *Staphylococcus lugdunensis* Endocarditis

Complicating Vasectomy in a 36-Year-Old Man

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Staphylococcus lugdunensis is part of the native flora in the inguinal region of the body. Inguinal surgeries, such as vasectomy, place carriers of this aggressive pathogen at risk for contamination. Native-valve endocarditis caused by coagulase-negative *S. lugdunensis* has a rapid and complicated clinical course. The pathogenicity of this organism is not limited to cardiac valvular destruction. We report the case of a 36-year-old man who presented with *S. lugdunensis* endocarditis, dysarthria, and hemiparesis 5 weeks after a vasectomy. To our knowledge, this is the first report of embolic stroke caused by *S. lugdunensis* endocarditis. In addition, we discuss the relevant medical literature. (**Tex Heart Inst J 2015;42(6):585-7**)

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Native-valve endocarditis (NVE) caused by coagulase-negative *Staphylococcus lugdunensis* has a highly aggressive and complicated clinical course that necessitates antibiotic therapy and, typically, valve replacement.¹⁻³ Complications associated with *S. lugdunensis* include myocardial abscesses, embolic phenomena, and death.⁴ *Staphylococcus lugdunensis* is part of the normal human skin flora, and infection with this organism has been associated with inguinal skin breaks during procedures such as vasectomy.^{5,6} We report the case of a patient who had *S. lugdunensis* NVE with embolic stroke after a vasectomy, and we discuss the relevant medical literature.

Case Report

In October 2013, a 36-year-old man with a medical history of tick bites, hyperlipidemia, glucose intolerance, and hypertension presented at an urgent-care center with headache, fever, fatigue, neck pain without stiffness, decreased appetite, and a 10-lb weight loss over 4 weeks. He reported no use of alcohol, tobacco, or intravenous drugs. His vital signs were as follows: temperature, 38 °C; blood pressure, 126/76 mmHg; respiration rate, 24 breaths/min; and oxygen saturation, 98% on room air. A physical examination revealed injected sclera but no heart murmur. Results of a complete metabolic panel and complete blood count were within normal limits except for a hemoglobin level of 12.9 g/dL. The patient was prescribed a 10-day course of doxycycline for suspected Lyme disease. However, he continued to have fever, chills, and night sweats; serologic test results for tick-borne illnesses were negative.

Two days after the patient had completed his antibiotic regimen, he was brought to our emergency department within 34 minutes of sudden-onset light-headedness, loss of balance, and a fall. His vital signs were as follows: temperature, 36.9 °C; heart rate, 115 beats/min; respiration rate, 14 breaths/min; blood pressure, 138/79 mmHg; and oxygen saturation, 97% on room air. His National Institute of Stroke Scale (NIHSS) score was 8; the results of his neurologic examination were consistent with right middle cerebral artery (MCA)-distribution stroke. Physical findings included an erythematous, tender rash on his right medial malleolus. Auscultation revealed a holosystolic murmur with radiation to the left axilla, and a soft S₁. We learned that the patient had undergone a vasectomy 5 weeks earlier in another hospital, and that a local postoperative wound had healed after standard wound care.

Notable laboratory values included hemoglobin of 11.9 g/dL with a mean corpuscular volume of 81 fL; leukocytes, 13.4 × 10⁹/L; and albumin, 3.3 g/dL. Coagulation and comprehensive metabolic profiles were within normal limits. A 12-lead electro-

cardiogram showed sinus tachycardia. A noncontrast computed tomogram showed a right hyperdense MCA sign, later confirmed on a computed tomographic angiogram of the Circle of Willis as an occluded right MCA.

The patient was given alteplase as thrombolytic therapy. Brain magnetic resonance images showed restricted diffusion signal abnormalities involving the right temporal-parietal lobes and right cerebellar peduncle. Echo-sequence images (T2-weighted) showed a 9-mm asymptomatic hemorrhage in the right cerebellar hemisphere. This was thought to be related to the thrombolytic therapy.

The patient's presentation met one major Duke criterion for infective endocarditis (a new valvular regurgitation murmur) and 2 minor criteria (fever and vascular phenomena). A transthoracic echocardiogram showed moderate mitral regurgitation without obvious vegetations. A transesophageal echocardiogram showed a 0.7-cm vegetation on the anterior leaflet of the mitral valve, a 1.5-cm vegetation on the flail or perforated posterior leaflet, and severe mitral regurgitation. Initial blood cultures grew *S. lugdunensis*.

The patient's broad-spectrum antibiotic regimen was changed to intravenous nafcillin. He developed a macu-

lopapular rash and acute kidney injury. His creatinine level became normal after nafcillin was changed to vancomycin. Eleven days after his stroke, he underwent uncomplicated mechanical mitral valve replacement. Postoperative anticoagulation with warfarin caused no side effects. One week after surgery, the patient was transferred to an acute rehabilitation facility for physical therapy and to continue intravenous vancomycin therapy for a total of 6 weeks. Neurologic evaluation 73 days after the stroke revealed a NIHSS score of 5 and a modified Rankin Scale score of 3 (moderate disability).

Discussion

Table I shows the 8 previous cases of post-vasectomy NVE with coagulase-negative staphylococci.¹⁻⁶ To our knowledge, this is the first report of stroke related to *S. lugdunensis* endocarditis after a vasectomy, and it is the 6th report of an embolic stroke in association with this pathogen.

All 8 patients in the earlier reports¹⁻⁶ were younger than 51 years of age and presented with symptoms of endocarditis (fever, heart murmur, or both) at an average of 38 days after vasectomy. *Staphylococcus lugdunensis* NVE has been associated with variable but serious

TABLE I. Cases of Native-Valve Endocarditis after Vasectomy

Reference	Pt. Age (yr)	Infective Organism	Affected Valve	Days from Vasectomy to Symptoms	Complications	Days from Admission to Valvular Surgery	Time to Recovery after IV Antibiotic Therapy
Dan M, et al. ¹ (1984)	32	<i>Staphylococcus wameri</i>	Aortic	30	Epididymitis, multiple emboli, and LV enlargement	19	4 wk
Walsh B and Mounsey JP ² (1990)	32	<i>S. lugdunensis</i>	Aortic (tri)	90	Transient right-arm weakness and pain	5	4 wk
Lessing MP, et al. ³ (1996)	34	<i>S. lugdunensis</i>	Aortic (tri)	30	Aortic reflux	1	38 d
	37		Aortic (bi)	21	Aortic root abscess	1	NA ^a
	42		Aortic (bi)	29	Femoral artery embolus, pulmonary edema, and aortic root abscess	5	6 wk
Kessler RB, et al. ⁴ (1998)	28	<i>S. hominis</i>	Aortic	23	Epididymitis	10	6 wk ^b
Fervenza FC, et al. ⁵ (1999)	39	<i>S. lugdunensis</i>	Mitral	21	Ruptured posterior chordae tendineae and severe mitral regurgitation	42 ^c	7 wk
Cevasco M and Haime M ⁶ (2012)	50	<i>S. lugdunensis</i>	Aortic	57	Right first metacarpophalangeal joint pain (suspected embolus)	2	6 wk
Current case	36	<i>S. lugdunensis</i>	Mitral	35	Middle cerebral artery stroke	12	6 wk ^b

bi = bicuspid valve leaflets; IV = intravenous; LV = left ventricular; NA = not available; Pt = patient; tri = tricuspid valve leaflets

^aThe patient was reported to be well.

^bInpatient therapy

^cThis patient underwent valvular repair; all others underwent replacement.

complications, including abscess formation, valve perforation, large vegetations, and embolic sequelae. The symptoms of *S. lugdunensis* endocarditis complicated by embolic cerebrovascular events range from mild, transient, upper-extremity weakness to hemiparesis and homonymous hemianopsia.^{2,7-11} Our patient presented with dysarthria and left hemiparesis 35 days after vasectomy and had constitutional symptoms of fever, chills, night sweats, and weight loss.

In the 9 cases of NVE after vasectomy, *S. lugdunensis* was identified in 7, *S. hominis* in one, and *S. warneri* in one.¹⁴ *Staphylococcus lugdunensis* has been misidentified as *S. hominis* or *S. aureus* when the sample was not tested for ornithine decarboxylase or when the VITEK[®] MS automated microbial identification system (bioMérieux, Inc.; Durham, NC) was used.^{2,8,10,11}

The value of thrombolytic therapy in embolic stroke resulting from infective endocarditis is not clear. Sontineni and colleagues' review of relevant cases indicated improvements in NIHSS score at the time of hospital discharge when there was thrombolytic therapy and no hemorrhage.¹² Our patient's NIHSS score did not immediately improve; the improvement after 10 weeks was most likely because of intensive rehabilitation. In addition, he had a small cerebellar hemorrhage, which we think resulted from thrombolytic therapy. Although our patient's presentation is very rare, the differential diagnosis in patients who present with stroke and infective symptoms should include infective endocarditis.

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