CONCURRENT CENTRAL NERVOUS TUMOR DETECTED IN POSTOPERATIVE PERIOD OF ELECTIVE CARDIAC SURGERY

A. ÖCAL, MD,
E. İBRİŞİM, MD,
T. YAVUZ, MD,
A. KUTSAL, MD

From:
Department of Cardiovascular Surgery, Süleyman Demirel University, Sevket Demirel Heart Center, Isparta, Türkiye

Adress for reprints:
Dr. Ahmet Öcal
Süleyman Demirel Tıp Fakültesi
Şevket Demirel Kalp Hastalıkları Merkezi,
Isparta, Türkiye
Tel: +90 246 2326886
Fax: +90 246 2329422
e-mail:
ahmetocal@superonline.com

Intracranial silent tumors are one of the reasons of the progressive stroke that occurred in the early postoperative period of the elective cardiac surgery. Two cases are presented to emphasize the importance of early dynamic investigations and surgical approach in patients who have undergone coronary bypass surgery and, mitral valve replacement and consequently had postoperative neurologic deficit.

Key words: Central nervous tumor, cardiac surgery

Central nervous system (CNS) injuries are the most devastating complications of open heart surgery. The reported incidence of CNS complications varies widely between 0.7-5% (1,5). Age is a predictive risk factor and the incidence in older patients approaches 9% (3). Patients with a previous cerebrovascular disease have a three-fold increased risk of a new deficit or worsening of a previous deficit (1,5). The most common permanent deficit is stroke, but reversible ischemic deficits like encephalopathy, coma, cognitive deficits and seizures may also occur. Cerebral macro and microemboli or a period of hypoperfusion are the most common causes of postoperative CNS injuries. Sources of macroemboli include ascending aortic arch and carotid artery thrombi, calcium and debris from intracardiac surgery and air (1,3,5). Microemboli are generated by cardiopulmonary bypass (CPB) and procedural maneuvers (6,7). Postoperative prolonged hypotension and low cardiac output may cause cerebral dysfunction (5). Neurologic

deficits associated with deep hypothermia and circulatory arrest are related to the duration of arrest, temperature during arrest period, hyperglycemia and possibly the management of blood pH and CO_2. Intracranial bleeding is less common and usually secondary to an embolus. Patients with permanent lesions face an hospital mortality of 1.5-3% (1). Intracranial silent tumors are one of the reasons of the progressive stroke that occurred in the early postoperative period of the elective cardiac surgery. Especially benign tumors are unable to be recognized in preoperative routine evaluations. Because of some detrimental effects of CPB and anesthetic medications, a silent tumor may aggravate and variable neurologic deficits may result. The most common benign tumor is meningioma. During the evaluation of postoperative neurologic deficit's etiology, meningioma must be considered as well, and advanced investigations (contrast computerized tomography, MRI, etc.) should be carried out immediately.

Two cases are presented to emphasize the importance of early dynamic investigations and surgical approach in patients who have undergone coronary bypass surgery and, mitral valve replacement and consequently had postoperative neurologic deficit.

CASE REPORT

Case 1

58-year-old male patient had triple vessel disease and moderate ventricular dysfunction. He has undergone coronary artery bypass surgery in 1995 and mammarian artery was utilized and anastamosed to the anterior descending coronary artery, while two saphenous conduits were anastamosed to the right coronary artery and obtuse marginal branch of circumflex coronary artery, respectively. Perfusion pressure was not permitted to drop under 50 mm Hg during CPB and mild hypothermia was achieved. There was not any observable major atherosclerotic changes on the aorta, proximal anastomoses were done with single aortic cross-clamp technique. CPB was terminated at stable and normal hemodynamic conditions. Cross-clamp time was 52 minutes and CPB time was 64 minutes. The patient woke up at the postoperative 6th hour and neurologic examination was normal, no neurologic deficit was detected. The patient was extubated at the postoperative 12th hour and mobilized on the first day. On the 4th day, a sudden syncope attack occurred and patient was transferred to ICU and was fully monitorized. No ischemic pathology and rhythm disturbance were detected. In neurologic examination, unconscious mental state, left sided hemiplegia, anisocoria were detected. An intracranial tumoral mass and probability of herniation and edema were considered and advanced tests were performed. Parietal meningioma (in 6x4x3 cm dimensions) was detected in contrast CT. Craniotomy was performed immediately after CT scan and meningioma was removed subtotally and cerebral edema was lessened. The diagnosis of meningioma was confirmed by histopathologic examination. He was extubated at the 18th postoperative hour without any neurologic deficits and mobilized on the second day. During the second operation and postoperative period no cardiac abnormality was observed. He was discharged on the 12th postoperative day and was controlled in 2nd, 6th month and later on periodically once a year. The cardiac and neurologic conditions were found to be in normal limits.

Case 2

60-year-old female patient had mitral valve stenosis and NYHA Class III effort capacity. Severe mitral stenosis, moderate mitral valve insufficiency and minimal aortic valve insufficiency were found in echocardiographic examination. She has undergone an open heart operation in October 1999 in a different center and Sorin (size No. 27) mechanic prosthetic valve was utilized for mitral valve replacement. She was discharged in the 8th postoperative day without any problems. Approximately three weeks after the operation, a sudden syncope attack has occurred, and she was transferred to Süleyman Demirel Univercity Medical Faculty Research Hospital. In neurologic examination, unconscious mental state, anisocoria and fully dilated pupils were detected. Due to the anoxic and hypotensive period following the syncope, intracranial edema was considered and CT scan was planned. Posterior cerebellar tumoral

mass was detected in contrast CT. The patient was not operated on due to the decerebration state and only had antiedema and supportive treatment. CT scan fragment is presented in Figure 1.

COMMENT

Neurologic complications after open heart surgery occur as a progressive stroke and coma or reversible deficits. CNS injury is an important cause of morbidity and mortality. Treatment and evaluations should not be limited to only conventional antiedema treatment and routine neurologic examinations. Intracranial tumoral formations must be considered and dynamic diagnostic examinations should be performed despite unstable conditions. Cerebral edema and intracranial tumor may cause progressive stroke, coma, moreover, herniation and death. Because of such catastrophic events, early surgical approach has a great importance to save patient's life. Meningioma is observed in 14-19% and female to male ratio is 1.8/1.5, where one year survival rate is 91.3% (8). Tumor recurrence is related to surgical removal method, that is if it is total removal or not, and varies between 20-35% (8).

As a result, considering intracranial tumors in the evaluation of postoperative CNS injuries and performing dynamic diagnostic examinations have great importance in complete solution of neurologic problems and saving patients life without any permanent deficit.

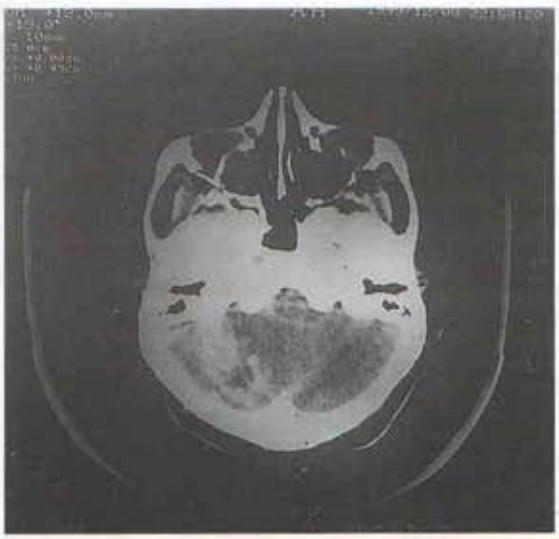

Figure 1. CT scan fragment of case 2.

REFERENCES

1. Brillman J. Central nervous system complications in coronary artery bypass surgery. Neurol Clin 1993;11 (2):475.
2. Mills SA. Cerebral injury and cardiac operations. Ann Thorac Surg 1993;56:58.
3. Mills SA: Risk factors for cerebral injury and cardiac surgery. Ann Thorac Surg 1995;59:1296.
4. Ricotta JJ, Faggioli GL, Castilone A, et al. Risk factors for stroke after cardiac surgery. Buffalo cardiac-surgery study group. J Vasc Surg 1995;21:359.
5. Rao V, Christakis GT, Weisel RD, et al. Risk factors of stroke following coronary bypass surgery. J Card Surg 1995;10 (suppl):488.
6. Blauth CL. Macroemboli and microemboli during cardiopulmonary bypass. Ann Thorac Surg 1995;59:1330.
7. Clark RE, Brillman J, Davis DA, et al. Microemboli during coronary artery bypass grafting. J Thorac Cardiovasc Surg 1995;109:249.
8. Wara WM, Sheline GE, Newman H, et al. Radiation therapy of meningioma, A Jr 1975;123:453-8.