Multiple Brain Abscesses in A Patient with Double Inlet Left Ventricle

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Introduction: Double inlet left ventricle (DILV) is a common form of univentricular atrioventricular connection. In most forms of DILV, the right ventricle is often small and both mitral and tricuspid valves open into enlarged left ventricle. The positions of the great arteries are reversed. This arrangement forces desaturated blood from the systemic venous system to pass through the RV and then return to the systemic circulation through the aorta without undergoing normal oxygenation in the lungs. Similarly, oxygenated pulmonary venous return passes through the LV and then back through the pulmonary artery to the lungs without imparting oxygen to the systemic circulation. In addition, there are defects in atrial and ventricular septa (ASD and VSD) following the DILV. Neglected cases will lead to some complications. Brain abscess is one of the frequent complications.

Methods: The pathophysiology of this case is based on the right-to-left shunt present in CHD that allows bacteria colonizing the airway to pass through the cerebral circulation. In addition, the polycythemia that the patient developed leads to tissue hypoxia and ischemia that together with the viscosity of the blood, creates a niche for bacteria growth. Brain abscesses associated with CHD are typically caused by S.aureus and Streptococcus spp.

Result: A five-year-old patient was consulted to the neurosurgery department with the main complaint of headache and fever for three weeks with no histories of seizure nor vomiting. The head CT scan result was cerebral abscess in right and left fronto-temporo-parietal lobes. He was given ampicillin, ceftriaxone, and metronidazole by the pediatrician. The GCS score was 15. The body temperature was 38.10°C, the respiratory rate was 22 times in a minute. There was no motor deficit found. The lips, tongue, and fingertips were cyanotic. The clubbing fingers were found. The cardiac auscultation showed a 3/6 systolic murmur in pulmonic region, a 3/6 systolic murmur in left sternal border, a loud P2 sound. The chest X-ray showed cardiomegaly. The echocardiography showed double inlet ventricle, TGA, severe pulmonic stenosis, and large VSD. The haemoglobin count was 18.4 g/dL, leukocytosis was found (18610/uL), and the hematocryte count was 60%. The neurosurgeon planned to perform a craniotomy for cerebral abscess aspiration.

Conclusion: In this case, the cerebral abscess aspiration is only a life-saving procedure because the patient already developed a symptom of increased intracranial pressure which can reduce cerebral blood flow if it is neglected. The definitive therapy is still the total correction of the cyanotic CHD. This condition can reoccur as long as the cyanotic CHD is not corrected yet.