

Neurological disorders in children with tetralogy of Fallot and pulmonary atresia with ventricular septal defect

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Background: Tetralogy of Fallot (TOF) and pulmonary atresia with ventricular septal defect (PA-VSD) are the most common cyanotic congenital heart disease (with right to left shunt). There is growing recognition and concern that patients with these heart defects are at increased risk of adverse neurodevelopmental outcomes. In fact, they can be frequently associated with ischemic stroke resulting from thromboembolism and others infectious or anoxic neurological complications.

Purpose: The aim of our study is to determine the frequency and nature of different neurological damage that can be associated with tetralogy of Fallot and PA-VSD.

Methods and Materials: We performed retrospective epidemiological study of neurological damage in infants with TOF and PA-VSD in the Pediatric department of Sahloul hospital (Sousse, TUNISIA) between January 1993 and June 2015.

Results: A total of 32 patients were enrolled in this study. 27 children were diagnosed with TOF and 5 children with PA-VSD. The mean age of diagnosis of the cardiac disease was 9.3 months. Only two children had a complete cure of their heart disease. Fifteen children (47%) had neurological damage, diagnosed at a mean age of 24 months; They were: 2 cases of brain abscess, 2 stroke cases, 2 cases of hydrocephalus, 1 case of cerebral thrombophlebitis, 1 case of association brain abscess and stroke, 2 cases of epilepsy and 5 children had only cognitive impairment. In 4 cases, the neurological involvement revealed the congenital heart defect. The neurological disease was confirmed by cerebral MRI in twelve cases and by brain CT in three cases. All patients had specific treatment of their neurological lesions. During follow-up 8 children had stabilization of their neurological diseases, 4 children died and 3 children were lost to seen.

Conclusion: Our study showed that these heart diseases are frequently associated with neurological complications if they are not early primary repaired. Neurological complications include essentially embolic stroke and brain abscess. Apart from these complications, neurodevelopmental impairment occurs in some children as sequelae to chronic hypoxemia. This neurological damage with different degrees of severity proves the vital importance of early surgical repair of patients with tetralogy of Fallot and PA-VSD.