

significant trend to be more common in hemorrhagic than in Ischemic types. The study done by Zimmer et al⁽²¹⁾ demonstrated the age trend with seizures being more frequent in younger children when looking at childhood arterial ischemic stroke. Wide ranges exist in the literature regarding the incidence of early seizures in children following stroke, ranging from 34 to 53.8%⁽²²⁾.

Youngest children tend to have higher rates of early seizure in the stroke setting. The occurrence of higher seizure rates in children than in adults is likely due to immaturity of the neural networks leading to imbalances in excitatory and inhibitory amino acids. This, in turn, can cause increased excitation or decreased inhibition which, can lead to increased susceptibility to develop seizures^(22,23). Other studies found that this presentation can be more common than hemiparesis especially in the neonatal period^(24,25).

Nearly two thirds (63.8%) of the patients in the current study were from Baghdad city, where the hospital is, and as a tertiary center many cases are referred to this center from nearby governorates.

We conclude that pediatric stroke is not uncommon in Iraqi children; arterial ischemic stroke is over-represented in children less than 12 months of age, furthermore hemorrhagic strokes present in children younger than ischemic stroke. Rapid assessment and diagnosis can be achieved by increasing awareness of pediatricians that vomiting, headache, and altered conscious states are indicators of serious intracranial pathology, warranting urgent neuroimaging. Childhood ischemic stroke appears to be more common in boys regardless of age and stroke subtype. Further exploration of this gender difference could shed light on stroke mechanisms in both children and adults. Complete stroke registries are necessary to provide information for future studies. Further studies evaluating a larger population in different clinical settings are

required to provide a more comprehensive picture of stroke in children in this area.

References

1. Amlie-Lefond C, Sébire G, Fullerton HJ. Recent developments in childhood arterial ischaemic stroke. *Lancet Neurol*. 2008; 7: 425-35.
2. Santos CC, Sarnat HB, Roach ES. Cerebrovascular disorders. In: Menkes JH, Sarnat HB, Maria BL (eds). *Child Neurology*. 7th ed. Philadelphia: Williams & Wilkins. 2006. p. 829.
3. Mackay MT. Stroke in children. Reprinted from *Australian Family Physician*. 2007 Nov; 36(11): 896.
4. Maguire JL, deVeber G, Parkin PC. Association between Iron- Deficiency Anemia and Stroke in Young Children. *Pediatrics*. 2007; 120; 1053.
5. Lynch JK. Cerebrovascular Disorders in Children. *Curr Neurol Neurosci Rep*. 2004 Mar; 4(2): 129-38.
6. Yock-Corrales A, Mackay MT, Mosley I, et al. Acute Childhood Arterial Ischemic and hemorrhagic Stroke in the Emergency Department. *Ann Emerg Med* 2011 Aug; 58(2): 156-63.
7. Abd Al-Muhsin Z, Al-Naddawi MN. Etiology and clinical patterns of stroke and hemiplegia in Children presented to Children welfare Teaching hospital/Medical City Complex-Baghdad. Board Dissertation. Iraqi Council for Medical Specialization in Pediatrics. 2008.
8. Al-Sulaiman A, Bademosi O, Ismail H, et al. Stroke in Saudi children. *J Child Neurol*. 1999 May; 14(5): 295-8.
9. Salih MA, Abdel-Gader AG, Al-Jarallah AA, et al. Stroke in Saudi children. Epidemiology, clinical features and risk factors. *Saudi Med J*. 2006 Mar; 27 Suppl 1: S12-20.
10. Giroud M, Lemesle M, Madinier G, et al. Stroke in children under 16 years of age. Clinical and etiological difference with adults. *Acta Neurol Scand*. 1997 Dec; 96(6): 401-6.
11. Wang LH, Young C, Lin HC, et al. Strokes in children: a medical center-based study. *Zhonghua Min Guo Xiao Er Ke Yi Xue Hui Za Zhi*. 1998 Jul-Aug; 39(4): 242-6.
12. Fullerton HJ, Wu YW, Zhao S, et al. Risk of stroke in children: ethnic and gender disparities. *Neurology*. 2003 Jul 22; 61(2): 189-94.
13. Golomb MR, Dick PT, MacGregor DL, et al. Neonatal arterial ischemic stroke and cerebral sinovenous thrombosis are more commonly diagnosed in boys. *J Child Neurol*. 2004; 19(7): 493-7.
14. Salih MA, Abdel-Gader AG, Al-Jarallah AA, et al. Perinatal stroke in Saudi children. Clinical features and risk factors. *Saudi Med J*. 2006; 27suppl 1: S35-S40.
15. Normann S, de Veber G, Fobker M, et al. Role of endogenous testosterone concentration in pediatric