E48 A Rare Case of Late and Incidental Finding of a Hemimegalencephaly

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After attending this presentation, attendees will be informed regarding an atypical incomplete manifestation of a rare neurological pathology. This pathology was diagnosed at a late stage in a 47-year-old man, within a forensic context.

This presentation will impact the forensic science community by confirming the necessity of collaboration between pathologists, forensic pathologists, and toxicologists, and the importance of a systematic approach as well as expanding the range of autopsy indications, particularly for men less than 50 years of age who are victims of sudden death.

Hemimegalencephaly is a rare brain pathology with an overgrowth due to *de novo* mutations of germ lines or post-zygotic mutations during pregnancy. This is usually diagnosed in early childhood and a postmortem finding in a 47-year-old man is quite rare.

The forensic institute was contacted following the discovery of a warehouse employee found lying on the floor of his workplace.

The man had a previous medical history of cardiovascular disease, with ventricular extrasystoles and high blood pressure, which was treated using various medications including amlodipine. He also had a neurological disorder. At an early age, the man was diagnosed with epilepsy and treated from the age of three months to the age of 14 years, without any relapse after discontinuing the treatment. The patient was not followed-up for his neurological disease, but his wife reported signs that suggested a possible neurological injury: his schooling was described as "complicated," he had difficulties with physical coordination, and he had a tendency to lean his head to the right side when reading, which suggested a possible psychomotor impairment and a hemianopia. No major handicap or difficulties in job integration were reported.

At the external macroscopic examination, no cutaneous injuries were found, and only signs of an asphyxia syndrome were observed.

During the autopsy, cranial examination revealed a skull cap occipital asymmetry, an encephalon with normal weight (1,514g) but with a left hemispheric hypertrophy and a temporal lobe engagement. Macroscopic analysis of cerebral cross sections revealed a parieto-occipital architectural disorganization with marked distribution anomalies of white and gray matter, associated to a pachygyria. No other abnormality was found.

Toxicological analysis revealed an overdose of amlodipine, with a rate at least five times higher than the normal rate. Neuroanatomopathological examination confirmed the diagnosis of hemimegalencephaly.

The cause of death was an asphyxia syndrome most probably due to a seizure in a context of hemimegalencephaly associated with an overdose of amlodipine.

Hemimegalencephaly frequently remains an isolated form, but it can be in a syndromic form, associated with cutaneous vascular abnormalities (Epidermal nevus, Klippel-Trenauney-Weber syndrome, Neurofibromatosis Type 1, etc.) or a total form, which is very rare.

The classical clinical triad associates drug-resistant seizures evolving from the first months of life, contralateral hemiparesis, and severe psychomotor deficiency. A hemicorporal hypertrophy, a macrocephaly, or a colpocephaly were also observed. The clinical presentation may vary depending on the severity of the malformation.

In the literature, a history of early drug-resistant seizures or hemicorporal neurological injuries is routinely reported in adults with hemimegalencephaly, whose intellectual performance may be described as normal.

In the present case, the clinical triad mentioned above was suspected, but with a much lower degree of severity than usually observed. Furthermore, an overdose of calcium inhibitors can provoke seizures, which can potentiate the convulsing effects of this pathology.

Hemimegalencephaly, which is a rare congenital pathology with multiple clinical presentations, is usually diagnosed at an early stage. A late occurrence in the adult remains exceptional and frequently associated with disabling neurological manifestations. Nevertheless, more moderate forms can be observed. In France, routine forensic investigation is performed when a sudden death occurs at a workplace. In this case, it led to the fortuitous incidental and late finding of a cerebral pathology.

Hemimegalencephaly, Anatomopathology, Forensic Autopsy