

Maladjustment of pressure settings of programmable shunt valves by weak Magnetic fields

Christiane Licht

Clinic Nuernberg, Germany

Hydrocephalus is caused by the progressive accumulation of cerebral spinal fluid (CSF) within the intracranial space. Resulting in an abnormal expansion of cerebral ventricles and, consequently, in brain damage. The standard treatment of hydrocephalus in children and adults is the implantation of a shunt valve (i.e. Codman-Hakim shunt valve from Johnson&Johnson). This study shows easy maladjustment of a Codman-Hakim programmable valve even with magnetic field strengths as they occur in daily life. A 53-year-old man presented to Forensic Psychiatry with triventricular hydrocephalus. Therapeutically, a ventriculo-peritoneal Codman-Hakim programmable shunt valve was implanted (originally set at 60 mmH₂O). During the patient's

hospitalization, the pressure setting of the valve was randomly changed at least six times, resulting in misleading "psychiatric behavior." It was determined that electromagnetic door locks of the hospital ward were the cause. Both - pressure settings of the patient's Codman-Hakim programmable valve as well as pressure settings of a new valve - were unwantedly modified simply by walking through standard doors in a hospital ward. Thus already weak magnetic fields (< 200 mT) might cause changes in the pressure settings of programmable shunt valves and therefore lead to maladjustment. Patients should be informed and pay attention to using everyday life's devices, like rod magnets or mobile phones.

e: christiane.licht@gmx.de