Specific Characteristics of MRT and CT Images of Brain in Parturients with Neurological Complications of Eclampsia: Systematic Review

Abstract Type: Meta Analysis/Review of the Literature
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The goal of the study was to classify protocol data recorded during magnetic-resonance tomography (MRT) and computer tomography (CT) examinations of brain in patients with neurological complications of eclampsia; to define the MRT/CT examination data structure; to perform frequency analysis of main MRT/CT characteristics and find out particular frequency distributions of the studied pathology. The data included into study was reported in medical journals and met definite criteria of inclusion.

Materials and Methods: We collected cases of neurological complications of eclampsia that were reported in English-language medical journals from 1980 to 2008. The study Methods include structural and frequency analysis of brain MRT/CT image protocols.

Results: Resulted sample volume was equaled to 77 cases of neurological complications of eclampsia. There were missing data in joint array so the volume of each variant varied from 16 to 77 values. We made an attempt to classify MRT/CT examinations structurally, extracting the following positions from the plain texts of MRT/CT descriptions:
- brain injury areas (occipital, temporal, parietal and frontal lobes);
- injury depth (cortical and/or subcortical matter);
- brain structures that undergone injury (the classification was too complicated);
- injury nature (vasogenic/ischemic edema, hemorrhage)

Abnormalities in occipital (84.6%) and parietal (70.7%) lobes were the most frequent, injuries in temporal lobes were quite rare (26.9%), but the damages in frontal lobes were the most uncommon (24.4%). Combined injury in occipital and parietal lobes was recorded in more that 2/3 of cases (72.4%). Combined injury in occipital - frontal lobes (29.3%) and occipital – temporal (27.6%) lobes were observed in almost 1/3 of patients. Synchronous injury in temporal and frontal lobes was the most uncommon (6.9%). The simultaneous damage of 3 and more lobes was observed quite rarely (14.6%).

Most of abnormalities were bilateral with frequency not less than 78.0%. But if unsymmetrical injury took place in some patients it was observed in right lobe in most cases. All analyzed cases include only 7.1% of single left injury and all of them were located in occipital lobe.

Vasogenic edema occurred in 83.5% of cases, while ischemic damage was observed in 10.4%. The incidence of hemorrhage was 6.1%.

Conclusions: The analysis allow to reveal a general picture of the most distinctive features of brain damage following neurological complications of eclampsia and to define specific problems for further research.