Classification of Intraventricular Haemorrhage in Newborn Infants and the International Statistical Classification of Diseases

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Summary

In the International Statistical Classification of Diseases (ICD) 10th Revision contains the classification of intraventricular hemorrhage (IVH), according to which there are 4 stages of the disease. Arguments are presented of insolvency this classification. The article proposes morphological classification of IVH, which should be the basis of the neuroimaging and clinics. In article proposed for deletion the classification of IVH from the new revision of the ICD and not to enter into a new revision of the ICD any other classification of IVH.

Keywords: Intraventricular Hemorrhage; Classification; Newborn; International Classification of Diseases; Nosology

Abbreviations

IVH: Intraventricular Hemorrhage; ICD-10: International Statistical Classification Of Diseases 10th Revision; SHE: Subependymal Hemorrhage; ICH - Intracerebral Hemorrhage

The classification of intraventricular hemorrhage (IVH) in newborn infants included in the International Statistical Classification of Diseases 10th Revision (ICD-10) requires a new revision, developed over 30 years ago and does not correspond to modern level of development of medicine. This is especially true for such brain damage, as IVH. In the ICD-10 identifies the following stages of the disease: P52.0 Intraventricular (non traumatic) hemorrhage, grade 1, of fetus and newborn subependymal hemorrhage (without intraventricular extension); P52.1 Intraventricular (non traumatic) hemorrhage 2 degree - subependymal hemorrhage with intraventricular extension; P52.2 Intraventricular (non traumatic) hemorrhage, grade 3 and grade 4 - subependymal hemorrhage with intraventricular and intracerebral extension.

The classification of IVH in ICD-10 is an ultrasonic classification reflects only one way to diagnose IVH. The classification of IVH recorded in ICD-10, developed on the basis of the first results of ultrasound and computed tomography studies of the brain of newborn children [1,2]. ICD-10 in 1990 by the World Health Assembly in 1994 came into use in the World Health Organization. In ICD, reflecting the most basic knowledge of pathology, could be the classification of morphological or morphological as most fundamental. The most accurate knowledge about the disease gives the morphology, and all other research methods, including radiological methods, can be given only by approaching the morphology results. It is therefore incorrect, if the morphologist will be guided by neuroimaging, but not morphological (its own) classification.

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What are the arguments against the classification IVH in ICD-10?

1) At first, ICD in many countries regarded as the most developed global standard for existing diseases and nosologic units, as an important source of knowledge in the study of diseases not only the statisticians but also physicians of all specialties. It is often forget that some of the provisions are outdated, need to be reviewed, that the considered classification is statistical and needs constant revision in the light of development of medicine.

2) Secondly, it is hardly expedient to include in the ICD any classification of stages of disease, especially those diseases that are still not well understood. IVH as nosology in newborn infants has only recently been formed and therefore there is no need to distinguish in statistical ICD stages of IVH. In ICD-10 there are no stages of development of pneumonia, stroke, gastritis and other well-known diseases, then what's the point in marking the stages IVH in newborns? Why is such a selective approach to the disease? ICD should include totality known diseases (nosology), rather than the stage of the disease.

3) Thirdly, now there are other classification of IVH [3], used by clinicians and pathologists, and which differ from the classification in the ICD-10. This creates a contradiction in medicine and raises the question of the correct classification of the courses in the ICD-10.

4) In the classification of the courses from ICD-10, the first stage is subependymal hemorrhage (SEH), that is, bleeding under ependyma wall of the lateral ventricle, having the form of small foci or spots. SEH is actually bleeding into the substance (in subependymal matrix) of the brain but not IVH, as of blood in the ventricle is not. How can you call intraventricular hemorrhage (stage 1 IVH) is a condition in which the blood in the ventricle is not? This is absurd. No IVH, therefore, there is no 1st stage, even if the blood has been found: in the matter of the brain, in the choroid plexus of the lateral ventricle or a under ventricle ependyma. No IVH - no IVH stage.

5) The classification of IVH in ICD-10 ignores the existence of other reasons for the breakthrough of blood into the lateral ventricles, primarily hemorrhages in the choroid plexus of the lateral ventricles. In such cases SEH do not exist. Maybe blood breakthrough into the lateral ventricles from intracerebral hemorrhage (ICH) semioval center, from periventricular hemorrhagic infarction, from periventricular leukomalacia with a hemorrhagic component, from hemorrhage of the cerebellum. In these cases, IVH is a complication of these primary pathological processes.

6) If there is ICH, it is not 3 or stage 4 IVH, and defeat that accompanies IVH, or is it a possible complication of IVH. Stages of the disease suggest a natural transformation of one stage to another, but ICH can not be considered one of the stages, because it is another nosological form of brain damage in newborns, distinct from the IVH.

Thus, the classification of IVH in newborn infants, is given in ICD is controversial, neuroimaging reflects outdated notions about this disease, does not account for morphological processes that are methodologically vulnerable and should be removed from the new revision of the ICD. In accordance with our numerous morphological studies [3-5], involving the mapping between the data of pathomorphology, ultrasound and clinic, are the following stage 3 courses: 1 - partial filling with blood one or two of the lateral ventricles without extensions 2 - blood filling the lateral ventricles with their possible expansion and the movement of blood in the 3rd and 4th ventricles of the brain, 3 - filling with blood 4 ventricle and moving it into a large tank of the brain, subarachnoid space of the hemispheres of the cerebellum, pons, oblongata and spinal cord [6]. As this classification was developed on the basis of morphological studies (the most accurate and reliable), it should be used by experts neurovisualization methods and by clinicians. At the same time, I consider it inappropriate inclusion of this or any other classification in the new revision of the ICD.

Conflicts of Interest

Conflicts of interest or any financial interest do not exist.

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Bibliography

1. Papile LA., *et al*. "Incidence and evolucion of subependimal and intraventricular hemorrhage: A study of infants with birth weights less than 1500 gm". *Journal of Pediatrics* 92.4 (1978): 529-534.

2. Shankaran S., *et al*. "Sonographic classificatio intracranial hatmorrhage: a prognostic indicator of mortality and short-term neurological outcome". *Pediatrician* 100.3 (1982): 469-475.

3. Vlasyuk V V. "Pathology of a brain at newborns and children of early age". *Moscow: Logosphere* (2014).

4. Vlasyuk V V., *et al*. "Intraventricular hemorrhage: the stage of development, complications, diagnosis and treatment". *Pediatrics Consilium Medicum* 3 (2013): 32-36.

5. Vlasyuk VV. "Clinical-morphological classification of intraventricular hemorrhage". *Voprosy sovremennoi Pediatrii* 12.6 (2013): 24-28.

6. Vlasyuk V V. "Spinal cord injury in newborns after intraventricular hemorrhage". *Bulletin of Experimental Biology and Medicine* 157.6 (2014): 718-720.