Yuldasheva Iltifatkhan, Abdurakhmanov Temurmalik.

Republican Emergency Medical Science Center.

Andijan branch.

The applicant Yakubova Ranohon

Andijan State Medical Institute

COMPUTED TOMOGRAPHY IN THE DIAGNOSIS OF ACUTE DISORDERS OF CEREBRAL CIRCULATION.

Annotation: *this article reflects on the importance of computed tomography in the diagnosis of acute disorders of cerebral circulation.*

Keywords: *dataset, stroke, computed tomography, dicom images, radiomics, machine learning.*

Acute cerebral circulatory disorders (ONMC) are one of the leading causes of morbidity, mortality and disability both worldwide. Annually, post-stroke disability ranks first among all causes of disability and amounts to 3.2 per 10,000 population. One of the promising areas of optimization of ONMC diagnostics is the introduction of decision support systems (DSS), including
through the use of machine learning methods, at the stage of interpretation of radiological images.

The relevance of this direction is due to a number of factors. Despite the high saturation of medical institutions with CT machines throughout Russia, there is a shortage of personnel. In addition, in large medical centers, where a large number of patients are examined around the clock, there is the factor of fatigue and attenuation of concentration. In such situations, the presence of DSS could minimize the impact of such factors on the quality of medical care. It is known that a representative sample is required to construct any DSS. In most scientific projects, authors have to collect data first, which requires significant time and

organizational resources. In some cases, developers try to use images accumulated in a medical institution over previous years, but working with them requires a thorough check of each clinical case for its compliance with the inclusion criteria and taking into account the fact that patient management protocols and treatment regimens could change during this time. Sometimes researchers use collections published in the public domain, but they most often contain a small number of observations.

In addition, the accompanying clinical information, the importance of which should not be underestimated, may not be presented at all or presented with a very short list of variables. Currently, a very limited number of datasets containing DICOM images of CT studies of patients with ONMC are publicly available.

In connection with the above, the purpose of this work was to create a collection of MSCT images and clinical data of patients with ONMC. In the course of the work, a collection was created that includes information about 220 patients, 130 of them with AI, 40 with GI, as well as 50 people without cerebrovascular pathology. Summary information on the gender and age structure of each of the groups is presented it was 18.6%, in the group with GI — 50%. The distribution of patients with AI according to various pathogenetic subtypes on the TOAST stroke scale was as follows: atherothromboembolic-30, cardioembolic -39, lacunar -12, stroke of another established etiology -4, stroke of another unidentified etiology - 48.

Among patients with AI, thrombolysis was performed in 18 cases, thromboextraction in 7, thromboaspiration in 5, revascularization of extracranial arteries was performed in 2 cases. Hemorrhagic transformation was observed in 17 patients

with AI (13%).

A total of 330 native CT studies were conducted: in 88 patients from the I I group and in 22 patients from the G group and the study was conducted twice.

All series were marked with the revealed direct and indirect signs of ONMC (hypotensive areas with ischemia, hyperdensive middle cerebral artery, intracerebral and intraventricular hemorrhages). Areas with cystic-gliotic changes corresponding to the manifestations of "old" ONMC were also contoured. In patients with I I in 78.5% of cases, CT angiography was performed (n=102).

DICOM images of 330 native computed tomography studies and 102 computed tomography angiography studies were collected. In 110 patients computed tomography examination was performed in dynamics. All the direct and indirect signs of acute cerebral circulatory disorders identified in the images were contoured by experts, each three-dimensional area of interest was assigned tags describing the type of pathological formation, its localization and the pool of blood supply. The collected data can be used to build medical decision support systems, including those based on machine learning methods and image biomarker analysis, in solving such important practical tasks as differential diagnosis of types of acute cerebral circulation disorders, automatic determination of the volume of the lesion area, risk assessment of hemorrhagic transformation, prognosis of the outcome of a clinical case and the degree of neurological deficit. In the future, it is planned to publish the collected collection in the public domain.

REFERENCES:

1. Leung C.C., Lam T.H., Cheng K.K. Let us not forgetthe mask in our attempts to stall the spread of COVID-19. Int J Tuberc Lung
2. Pai M. COVID-19 Coronavirusand tuberculosis: we need a damage control plan. Forbes, March 17, 2020. https://www.forbes. com/sites/madhukarpai/2020/03/17/covid-19 andtuberculosiswe-need-a-damagecontrol-plan/ ..

3. Henoch-Schoenleinsyndromeinchildren: experiencefrom southern part of Saudi Arabia / N.N Harbi // East afr. Med. – 2011.- Vol.73. №3. – P. 191–193
4. Lin Z.N. Interleukin - 1 receptor antagonistallele: isit a genetic link between Henoch-Schonlein nephritis and IgA–nephropathy? / Z.N Lin [et al.] // Kidney Int. - 2007. – Vol. 51. - № 6. – P.938-942