

## CHANGES IN THE FUNCTIONING OF THE VISUAL ANALYZER IN CASE OF SYSTEMIC PATHOLOGY DECOMPENSATION

Rudkovskaya O., Choban V., Kopelchuk V., Lastivka O.

Bukovinian State Medical University, Chernovtsy, Ukraine

**Introduction:** The functioning of the visual analyzer is energy-consuming. A hypothesis is put forward to the effect that it is not advantageous ergonomically for the human organism to support the work of the visual apparatus in case of decompensation of systemic diseases, resulting in its blocking. The saved reserves of the host defenses prolong the human life for a certain period of time. It is known that the functioning of the visual analyzer is very energy-consuming. It is provided by the functioning of 6 pairs of the cranial nerves (half out of the available 12 pairs).

**Hypothesis:** blocking the visual analyzer (from the point of view of preserving the reserves of the host defenses) may be useful for the organism, struggling for its survival.

When a malignant tumor, really threatening a human life, develops in the organism, tumor metastases in choroidea are often observed, namely –into the central portion of the fundus of the eye. It causes a rapid and considerable reduction of the visual acuity (e.g. from 1.0 to photoperception). The development of this particular pathology may be regarded as a defense compensatory reaction of the organism. The exclusion of one eye from the activity reduces man's energy expenditure on the functioning of the visual apparatus (which appears to be large enough) and saves the body's reserves for a struggle with fundamental diseases.

In case of an extreme emaciation of the organism by the neoplastic process (in nearly 1/5 of the patients) there occurs bilateral tumor dissemination into the central portions of the choroid with a complete deprivation of the visual analyzer. It prolongs a patient's life for a certain period of time. We have come to such a conclusion, while analyzing the clinical presentation of another severe disease – disseminated sclerosis (DS). According to bibliographical data, a more benign disease's course is registered in patients with one of the manifestations of DS – retrobulbar neuritis. An exacerbation of retrobulbar neuritis of one or both eyes in patients with DS delays the development of rough focal signs in these patients. They sometimes do not appear in them at all. Therefore, a sharp reduction of vision or complete blindness of one or two eyes due to retrobulbar neuritis (blocking of the visual analyzer) improves the DS course that may also be regulated as a body's compensatory reaction to a severe systemic disease.

Malignant blood tumors in children (a systemic disease) emaciate the host defenses of the child to such an extent that metastases in the orbit, are as a rule, bilateral whereas in case of nasopharyngeal carcinoma (a local process) – unilateral.

Irreversible changes of the eyes with a loss of vision develop in 2 % of the cases with such a serious disease as rheumatism, despite an adequate cure started in time.

All the above –stated concern diabetes mellitus and essential hypertension as well. In case of a decompensation of these processes diabetic and hypertensive retinopathies which sharply reduce the eyesight of a patient down to blindness develop there. We regard the pathology in question as a body's compensatory reaction, aimed at economizing energy consumption in a struggle with the fundamental disease in order to prolong a man's life for a certain period of time.

All the efforts of ophthalmologists to enhance the visual functions in patients with terminal stages of diabetic and hypertensive retinopathy are not effective as a rule, corroborating, to our way of thinking, a hypothesis suggested by us to the effect that the functioning of the visual apparatus is disadvantageous ergonomically to the organism in such a situation.

**Conclusions:** Thus, the deprivation of the visual analyzer at late stages of grave diseases is a body's compensatory reaction aimed at economizing the reserves for man's survival. Attempts to restore eyesight in this particular situation are unpromising.

**Key words:** visual analyzer, compensatory reaction, ergonomics.

## DETECTION OF LATE COMPLICATIONS OF THE PERMANENT VASCULAR ACCESS IN HEMODIALYSED PATIENTS USING ULTRASOUND AND IMAGING METHODS. PILOT STUDY

Cernat Mircea, Andrei Vasiliev

*Academic adviser:* Igor Mişin, M.D., Ph.D., Professor, State Medical and Pharmaceutical University "Nicolae Testemitanu", Chisinau, Republic of Moldova

**Introduction:** The strategic direction to increase the lifetime of the PVA is to ensure proper function for the existing PVA maximally possible by early diagnosis of potential complications assessing the vascular diameter, hemodynamic characteristics of PVA and vascular status of existing reserves using DU and CT angiography with 3D reconstruction.

**Aim:** Detection of late complications of the permanent (P) vascular access (VA) in hemodialysed patients using Duplex ultrasound (DU) and CT angiography with 3D reconstruction.

**Material and methods:** between 2006 and 2012 – 82 patients were enrolled in the study with end-stage chronic renal failure who underwent iterative hemodialysis (HD) in various Hemodialysis departments: IMPSP CNŞPMU, IMSP SCR, IMSP SCM №3 „Sfântă Treime”, IMSP SR Comrat, IMSP SR Cahul, IMSP SM Bălţi, ICŞDOSMC. The mean age was  $49.62 \pm 1.48$  (27-72) years; the male/female ratio was 42/40. The mean duration of treatment with iterative HD was  $5.61 \pm 0.52$  (0.2-16) years. DU was performed with the device „Vivid S6”, General Eectrics, Medical Systems. Qualitative and quantitative parameters of blood flow in arterio-venous fistula (AVF), vascular resistance index and pulsatility index were evaluated. In 7 (8.5%) patients, because of considerable difficulties in interpretation of results by DU, CT angiography with 3D reconstruction was performed using Siemens Emotion 16 (Germany) with Ultravist solution – 150 ml i/v.

**Results:** in case of AVF stenosis the blood flow determined by DU was turbulent and collateral, decreased to 500-600 ml/min; in cases of aneurysms – it was 2500-5000 ml/min. 3D-CT angiography allowed visualization of the full trajectory of AVF, including arterio-venous anastomosis, permeability/obstruction of central vein, the degree and extension of the stenosis. In 3 cases the diagnosis of central vein stenosis was confirmed. In one case of multiple aneurysms of AVF the full path of the VA was viewed, including the arterio-venous anastomosis with multiple aneurysmal dilatation (n=3). In 3 patients the depletion of upper limbs vascular reserves was found. Late complications of VA were diagnosed in 44 patients (53.6%). In 24 (29.2%) patients the depletion of vascular reserves were established. The complications pattern: AVF thrombosis – 29.5% (n=13), AVF stenosis – 36.4% (n=16), aneurysm – 29.5% (n=13), blood steal syndrome – 2.3% (n=1), carpal tunnel syndrome – 2.3% (n=1).

**Conclusions:** DU of upper limb vessels is the method of choice in studying hemodynamic parameters of AVF. CT angiography provides significant advantages compared to DU in determining the degree and extent of stenosis, in assessing the state of the vascular system of the upper limbs and of central veins, and also in determining the vascular reserves of the patient in order to choose the optimal method of correction of complications.