

ANALYSIS OF HEMOGLOBIN CONTENT IN RETICULOCYTES (RET HE) IN PREMATURE INFANTS

*Pratasevich T.S., Atthanayaka Mudiyansele Githara, Kaduboda
Arachchige Minura Menaka, Shiny Probodini Peiris
Grodno State Medical University*

Relevance. The hemoglobin levels in reticulocytes (Ret–He) is a representation of instantaneous hemoglobin synthesis. As a result of the short life span of reticulocytes than matured RBC, they are a preliminary sign of iron deficiency. Accordingly, this parameter allows the early diagnosis of iron deficiency anemia and even the early restorative effects of iron therapy. Ret–He is the fastest way to identify changes in the current iron supply and also the quality of the cells [1].

Research objectives. To analyze Ret–He content in capillary blood on admission of pre-mature babies.

Research methods. A retrospective analysis of 67 case reports of pre-term babies that were admitted in the Grodno Regional Children's hospital during the period of January 2024 to November 2024 was studied. Statistical processing of the data obtained as a result of the research was carried out using traditional methods of variation statistics using the application package "STATISTICA 10.0" and "EXCEL". Mann–Whitney test was used.

Results and its discussion. The gestational age of the pre-term babies ranged 33 (30–36) weeks. The average parameters at birth of the babies were as follows: birth length – 45 (41;47) cm, birth weight –1950 (1420;2410) g, head circumference – 31 (28;32) cm. Pursuant to the clinical reports of the mothers of the studied babies, the following statistics were recorded. Threatened miscarriages was observed in 22 (32.8%), pre-eclampsia – in 11 (16.4%), acute respiratory diseases – in 22 (32.8%). And other diseases – in 62 (92.5%). A total of 24 (35.8%) mothers had anemia. According to clinical manifestations respiratory distress syndrome was established in 48 (71.6%) pre-term newborns, congenital infections – in 53 (79.1%), central nervous system depression syndrome – in 29 (43.3%), intrauterine hypoxia – in 19 (28.4%), cardiovascular syndrome – in 17 (21.4%), heart failure – in 6 (9%). According to the ultrasound investigations there were 19 babies (28.4%) recorded with the widening of the posterior horns of lateral ventricles on the sagittal plane. Total of 23 babies were recorded with signs of brain cysts – 17 (25.4%) choroid plexus cysts and 6 (9%) of subependymal cysts were visualized. 30 of the total babies (44.8%) had signs of immaturity of the cerebral structures. On the lung fields of x-rays of the observed babies 12 (17.9%) had signs of pneumonia. Most importantly 36 (53.7%) of these premature babies were seen with signs of respiratory distress syndrome. In 12 premature babies the level of Ret–He was determined in complete blood count at the age of 6 (4,0;8,0) days upon admission to the hospital and was equal: 33,6 (32,15;35,15) pg which corresponded to normal values in the first weeks of life. Reference values for RET–He in premature infants are 27–34 pg. The level of reticulocytes was 31,85 (11,6; 60,3) %o.

Conclusion. The Ret-He test is an automated variant. It could be performed by utilizing the same blood sample used for the common blood test. It is a robust assay as the Ret-He value is not impacted by infections or inflammation in comparison to serum ferritin levels. The level of Ret-He in reticulocytes requires dynamic determination to identify early diagnosis of iron deficiency in premature infants.

REFERENCES

1. Ogawa, Chie Reticulocyte hemoglobin content / C. Ogawa, K. Tsuchiya // Clinica Chimica Acta. – 2020. – 504. – C. 138–145.

COMPREHENSIVE TREATMENT OF JAW BONE DEFECTS IN PATIENTS WITH COVID-19

Ruzieva S.S., Boymuradov Sh.A.

Tashkent Medical Academy

Relevance. The COVID-19 pandemic has significantly impacted bone tissues, causing impaired blood circulation, osteonecrosis, and deformation in the jawbone. This study evaluates the effectiveness of modern therapeutic approaches, including bioactive materials and PRP technologies, in addressing these complications.

Research objectives. Comprehensive treatment of COVID-19–induced jawbone defects plays a crucial role in improving patients' quality of life.

Research methods. 60 patients (40 males and 20 females, mean age: 45 ± 7 years). Jawbone osteonecrosis and bone mineral density (BMD) were assessed using X-ray, MRI, and blood tests.

Treatment Methods: Bioactive Implants – Materials based on calcium phosphate and hydroxyapatite were used for jawbone restoration. PRP Therapy Patients' platelet-rich plasma was injected into the jaw area to accelerate bone regeneration. Regenerative Therapy – Vitamin D supplements (5000 IU weekly). Low-dose hormone therapy. Physiotherapy, including low-frequency laser and electrophoresis.

Statistical Analysis. All results were analyzed using SPSS software with a significance level of $p < 0.01$.

Results and its discussion. Diagnostic Findings: Jawbone osteonecrosis was observed in 42% of patients.

Laboratory tests showed low calcium and phosphorus levels in 65% of patients.

Treatment Effectiveness: Bone Regeneration: Achieved in 92% of patients within 10 weeks using bioactive implants. Pain Reduction: PRP therapy significantly reduced pain in 85% of patients. Bone Mineral Density (BMD): Pre-treatment: 0.8 ± 0.2 g/cm²; Post-treatment: 1.2 ± 0.3 g/cm² ($p < 0.01$)

Laboratory Results: Calcium levels increased from 8.5 ± 1.2 mg/dl to 10.4 ± 1.1 mg/dl. Phosphorus levels rose from 2.9 ± 0.8 mg/dl to 4.1 ± 0.7 mg/dl.

Pain Assessment: Pain levels, measured on the Visual Analogue Scale (VAS), decreased from 7.5 ± 1.3 pre-treatment to 2.3 ± 0.9 post-treatment.