Improved Treatment Of Pyelonephritis In Children During The Covid-19 Pandemic

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ABSTRACT

The novel coronavirus disease (COVID-19), called severe acute respiratory syndrome coronavirus-2 (SARS-Cov-2), first appeared in Wuhan, China in December 2019 [1, 2, 8]. Soon after, the World Health Organization (WHO) declared a global pandemic. **The purpose of the work**: to evaluate the clinical effectiveness of the use of vitamin A (Retinol amine) in children with pyelonephritis against the background of COVID-19. Materials and research methods: -we selected 100 children as research groups. Group I - Main group, Group II - Control group. All patients were examined using clinical, instrumental and laboratory methods. Clinical-laboratory examination methods of sheep were carried out in them: general blood and urine analysis; bacteriological examination of urine; determination of urea and creatinine in blood, total blood protein, procalcitonin, creatinine in urine, concentration ability of kidneys by Zimnitsky test. **Results:** according to clinical, laboratory and instrumental examination, children with pyelonephritis were divided into two groups. Child patients in the main group received standard therapy for COVID-19, 50 children in the main group were prescribed age-appropriate vitamin A along with standard therapy for COVID-19. The clinical effectiveness of the treatment was evaluated in dynamics up to 10 days. Children with normal clinical and laboratory parameters were taken for outpatient observation. **Conclusions:** Our clinical evidence shows that during the COVID-19 pandemic, adding retinol amine to pediatric patients with pyelonephritis significantly improved the clinical outcome of the disease.

Keywords: COVID-19, pyelonephritis, protienuria, microhematuria, sarcoiduria, retinol amine.

Background: The novel coronavirus disease (COVID-19), called severe acute respiratory syndrome coronavirus-2 (SARS-Cov-2), first appeared in Wuhan, China in December 2019 [1, 2, 8]. Soon after, the World Health Organization (WHO) declared a global pandemic. Recent data from human tissue RNA sequencing has shown that ACE2 expression in the kidneys is almost 100-fold higher than in the respiratory organs (lungs). Consequently, most parts of the nephron are targets for COVID-19!

The purpose of the work: to evaluate the clinical effectiveness of the use of vitamin A (Retinol amine) in children with pyelonephritis against the background of COVID-19.

Materials and research methods: -we selected 100 children as research groups.

- Group I- Main group

• Group II – Control group

All patients were examined using clinical, instrumental and laboratory methods. Clinical-laboratory examination methods of sheep were carried out in them: general blood and urine analysis; bacteriological examination of urine; determination of urea and creatinine in blood, total blood protein, procalcitonin, creatinine in urine, concentration ability of kidneys by Zimnitsky test.

Instrumental examination included ultrasound examination of kidneys and bladder.

Results: according to clinical, laboratory and instrumental examination, children with pyelonephritis were divided into two groups. Child patients in the main group received standard therapy for COVID-19, 50 children in the main group were prescribed age-appropriate vitamin A along with standard therapy for COVID-19. The clinical effectiveness of the treatment was evaluated in dynamics up to 10 days. Children with normal clinical and laboratory parameters were taken for outpatient observation.

The analysis of clinical observations showed that the normalization of body temperature in the main group of patients was observed in 5.2±0.8 days, in the control group - in 6.8±0.6 days, the difference in the time of normalization of body temperature indicators was 1.6±0.4 (R< 0.05) made up the day. During the same periods, the malaria symptoms of the sick children disappeared, and their general condition improved. In the children of the main group, the loss of pain in the lower back occurred on 6.6±0.8 days, in the control group - on 9±0.6 days, i.e. 2.4±0.6 days later. Bacteriuria in the children of the main group of patients disappeared by the 10th day of treatment in 88% of patients or was 103 KOE/ml, during this period, this change was observed in 62% of the control group. The disappearance of leukocyturia took 6.7 ± 0.4 and 9.6 ± 0.6 days, respectively, and the difference in the duration of symptoms was 3.3 ± 0.7 days (R < 0.01). Although there was no decrease in ECh values to normal values in both groups, a decrease of up to 20% of baseline values was observed in patients of the main group. In the hemogram, the number of leukocytes decreased to the norm in 6.2±0.6 days in the main group of patients, and in 8.3±0.5 days in the control group. As an indicator of clinical recovery, we observed the disappearance of general weakness on the 10th day of examination in 8 (16%) children of the control group and 22 (44%) of the main group.

The indicators of the main group of patients on the indicator of increased body temperature were 16.2% higher than those of the control group, the disappearance of pain in the lumbar region - 24.4%, the disappearance of bacteriuria - 26%, the disappearance of leukocyturia - 17.4%, the normalization of the ECT indicator - 24.2 %, normalization of hemogram indicators - 8.7%, loss of general weakness - 22.6% was found. In general, SK was 20.2% higher in patients of the main group than in the control group. Thus, the study showed that the inclusion of vitamin A in the treatment regimen increases the effectiveness of treatment by 15.4% (R >0.05).

The results of the examination showed that the parameters of ALT, AST, GGT, IF and XE in the main group of patients were restored to normal values on the 7th day of treatment. At the same time, the level of OMP, the activity of LPO (MDA and XL) processes remained 27.8%, 27.4% and 14.8% higher than the normal values, respectively, and the complete recovery of these values occurred on the 10th day of treatment.

Recovery of study parameters was slow in control group patients, ALT, AST, GGT, IF and XE values were 68.4%, 86.2%, 48.6%, 59.8% and 15.6% of normal values, respectively, on the 7th day of treatment. , MDA, XL and O'MP indicators - 40.9%, 52.2% and 96.8%, respectively, were kept high. By day 10 of treatment, IF, MDA, and XL remained 17.8%, 19.2%, and 22.8% above normal, respectively.

The results of the investigation showed that when vitamin A was added to the complex treatment (the main group), the indicators of the activity of the enzymes of the electron transport system in erythrocytes corresponded to the normal values on the 7th day (Fig. 3.9). At the same time, the amount of cytochrome S in erythrocytes and G-6-FDG enzyme activity in control group patients were 22.3% and 17.2%

lower than the normal values (R<0.05), the amount of cytochrome S in blood plasma, NADFN-cytochrome in erythrocytes The activity of s-reductase and NADFN-cytochrome b5-reductase enzymes was found to be 16.8%, 24.8%, and 23.2% higher than normal, respectively. On the 10th day of treatment, in these patients, the amount of cytochrome C in erythrocytes was low, the activity of NADFN-cytochrome c-reductase enzyme was high, and the activity of G-6-FDG was low, and the values were 15.8%, 18.6%, and 16.7% of normal, respectively. % (R<0.05) differed.

Thus, the results obtained in the conducted investigations showed that the introduction of vitamin A into the standard treatment regimen in children with pyelonephritis against the background of COVID-19 2.3 days earlier in the renal calyx-cement system and parenchyma led to the normalization of the parameters describing the processes of membranolysis and cytolysis, and the restoration of the electron-transport function of erythrocytes. allows, it can serve as the main criterion for the acceleration of the regression of the inflammatory process in the kidneys and the acceleration of clinical recovery.

The high positive effect of vitamin A aimed at restoring the damaged processes in the cell membrane, reducing the activity of proteolysis processes, and restoring the activity of the enzymes of the electron transport system in erythrocytes makes it possible to recommend its inclusion in the standard treatment scheme for children with pyelonephritis against the background of COVID-19 as an adequate antihypoxant and antioxidant agent.

Conclusions: Our clinical evidence shows that during the COVID-19 pandemic, adding retinol amine to pediatric patients with pyelonephritis significantly improved the clinical outcome of the disease.

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