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ASSESSMENT OF DYNAMICS OF HEMOSTASIS SYSTEM INDICATORS AND INFLAMMATION MARKERS IN PATIENTS WITH CORONAVIRUS INFECTION

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Abstract

The coronavirus infection (COVID-19) is an infectious disease that spreads rapidly all over the world and is accompanied by severe complications. Severe coagulopathy, arterial and venous thrombosis were the main causes of death in COVID-19. In addition, it was noted that the indicators of acute phase proteins in patients increased several times over the standard indicators. Inflammatory reaction, which is evident in response to coronavirus infection, can damage the blood vessel wall and lead to the activation of the hemostasis system.

Keywords: coronavirus, COVID-19, hemostasis, D-dimer, C-reactive protein, ferritin.

Purpose of the Research

The purpose of the research is to evaluate the dynamics of hemostasis system and acute phase protein indicators in patients with coronavirus infection.

Materials and Research Methods

The research was conducted at the Samarkand Regional Clinical Hospital of Infectious Diseases. 51 patients diagnosed with coronavirus infection participated in the research. At discharge from the hospital and after 4 months, prothrombin time,

activated partial thromboplastin time (APTT), fibrinogen, D-dimer, ferritin and C-reactive protein were determined in all patients.

Research Results

After treatment in the hospital, the following values of blood coagulation system indicators were observed in patients. Quick prothrombin time 84-91% (88%), APTT 29-32.7 s (31.2 s), fibrinogen 3.0-3.9 g/l (3.5 g/l), D-dimer 503-2183 ngFEU/ ml (951 ngFEU/ ml). It was found that the level of D-dimer in the blood of the patients was 1.6 times higher than the normal values, while other values corresponded to the normal values. When patients were re-analyzed after 4 months, the prothrombin time according to Quick increased by 1.25 times - 109% (101-123), APTT decreased by 1.2 times - 25.9 s (24.4-27.3), it was also found that the level of D-dimer decreased by 2.5 times - 340 ngFEU/ml (220-520) [8,9]. These changes showed the normalization of the activity of the external and internal coagulation pathways due to the cancellation of anticoagulant drugs prescribed for the prevention of thrombus formation; the marker of thrombus formation was an increase in the level of D-dimer in the hospital stage. After 4 months, the decrease of D-dimer concentration to normal values reflects the restoration of anticoagulant and fibrinolytic blood systems.

Acute phase proteins ferritin and C-reactive protein were also analyzed in dynamics. At the time of discharge from the hospital, ferritin level in patients was 2.9 times higher than the upper limit of reference indicators - 440 ng/ml (286-607), C-reactive protein was at the upper limit of reference indicators - 5 mg/l (2- 14.5). After 4 months, a decrease in acute phase proteins was observed: ferritin 3.2 times to 139 ng/ml (86-237), C-reactive protein to 1 mg/l (0-5). This dynamic indicates that the symptoms of the inflammatory response caused by the coronavirus infection have disappeared.

Conclusion

The four-month recovery period after coronavirus infection is accompanied by the normalization of the activity of the blood fibrinolytic system and the level of inflammatory markers.

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