

THE FIRST CONFIRMED SARS-COV-2 DELTA VARIANT IN SERBIA

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PRVI POTVRĐENI SLUČAJ DELTA VARIJANTE SARS-COV-2 U SRBIJI

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SAŽETAK

Teški akutni respiratorni sindrom koronavirus 2 je beta koronavirus grupe 2B koji pripada porodici Coronaviridae. Delta varijanta, koja se pojavila u indijskoj državi Maharaštri u decembru 2020, danas je najzastupljenija varijanta i sastoji se od tri podtipa, B.1.617.1, B.1.617.2, B.1.617.3. Brzina prenosa delta varijante veća je 50%–60% od alfa varijante i upravo ovaj tip koronavirusa trenutno zabrinjava svetsku populaciju. U ovom radu predstavljamo slučaj prvog registrovanog pacijenta sa delta varijantom kovida 19 u Srbiji.

Cljučne reči: COVID-19; SARS-CoV-2; SARS-CoV-2 varijante.

INTRODUCTION

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a Betacoronavirus of 2B group that belongs to the family of Coronaviridae (1, 2). Its genome consists of a single-stranded RNA with a positive sense, which shares 79% and 50% of sequence similarity with SARS-Cov and MERS-CoV, respectively (1,2). In addition, it codifies non-structural proteins (NSP1-16) and structural proteins (S,E,M,N) (1). The main target of the virus is the respiratory epithelium, and the mechanism of entrance is the union between the S-protein and the ACE2 receptor (2, 3). 80 % of patients present a mild infection, 13,1 % a severe infection and 6,1 % a critical situation (2, 3).

Despite the low rate of mutation of SARS-CoV-2 compared to other RNA viruses, fast transmission around the world during the pandemic has allowed it to obtain a relevant genetic heterogeneity. Due to this fact, several variants have appeared and some of them are known as variants of concern (VOC) (1). Delta variant, which emerged in the Indian State of Maharashtra in December

ABSTRACT

Severe acute respiratory syndrome coronavirus 2 is a Betacoronavirus of 2B group that belongs to the family of Coronaviridae. Delta variant, which emerged in the Indian State of Maharashtra in December 2020, is nowadays the variant of the most widespread concern and it consists on 3 subtypes, B.1.617.1, B.1.617.2, and B.1.617.3. The transmission rate of Delta variant is 50% - 60% higher than the Alpha variant and this variant is what currently concerns the world population. In this paper, we present the case of the first registered patient with Delta variant of COVID-19 in Serbia.

Key words: COVID-19; SARS-CoV-2; SARS-CoV-2 variants.

2020 (4), is nowadays the variant of the most widespread concern and it consists on 3 subtypes, B.1.617.1, B.1.617.2, and B.1.617.3 (5). However, the main mutation is a deletion of 2 amino acids at position 156 and 157; in addition, the Arginine at position 158 changes to Glycine. This leads to a modification in the Spike protein of the virus that makes the binding of the neutralizing antibodies to its surface more difficult, so it evades the immune system (1). Due to these changes in the structure, the transmission rate is 50%-60% higher than the Alpha variant, that was 50% higher than the wild strain (1,4-6). Owing to this fact, in countries such as India it took only 60 days to affect and additional 0.36% of the inhabitants (7). Furthermore, in the UK by June 2021, Delta variant represented 50-90% of COVID cases, while in the US it was between 6% and 18% (1,4). Here we present the first case of SARS-CoV-2 delta variant in Serbia.

CASE REPORT

A 26-year-old man was referred from Covid 19 ambulance to the General hospital "Studnica" after a

positive antigen test SARS-CoV-2 was obtained on 28th June, 2021. The illness began three days before the first visit to the doctor, after returning from hiking in Russia, where he was with a group from Belgrade. The epidemiologist was notified, and the rest of the group was put in isolation. The patient reported that he had fatigue and fever, up to 38.6°C. He also lost his sense of smell and taste a few days before. The patient had not been vaccinated against the SARS-CoV-2 virus. During the first examination on June 29th, 2021 he was afebrile, with a heart rate of 64 beats per minute and a saturation of 97%. Blood analysis performed on that day showed leukopenia with mild thrombocytopenia. Laboratory results are shown in Table 1. The patient was released for home treatment. The therapy included antibiotics along with probiotics, acetylsalicylic acid, paracetamol, vitamins C and D, a proton pump inhibitor and a corticosteroid. On July 2nd the patient came for the follow-up examination. He stated that he did not feel better and that he had a fever during the previous day. He complained of weakness, extreme fatigue, difficulty breathing on exertion and a dry cough. He was febrile 37.3°C, with oxygen saturation 93-94%.

The delta variant of SARS-CoV-2 was confirmed at the Veterinary Institute of Kraljevo. After that, the patient was sent to the Clinic for Infectious Diseases at the University Clinical Center Kragujevac for further treatment.

Upon admission to the University Clinical Center Kragujevac, auscultatory finding on the lungs indicated diffusely attenuated respiratory murmur with wheeze over the basal segments bilaterally. He was treated with 9 L/min of oxygen on admission, while the partial pressure of O₂ was 12.5kPa and the SaO₂ was 98%.

On the 2nd day of hospitalization the patient reached a saturation value of 97% on oxygen therapy with the flow of 7L/min. Level of IL-6 was examined and was in the range of normal values (<1.5 pg/mL). On the 4th day of hospitalization oxygen flow was lowered to 4L/min and the patient reached SaO₂ up to 98%. During the 6th and 7th day of hospital treatment, patient had SaO₂ up to 98% without oxygen mask and on the 8th day a normal auscultatory finding was present in the lungs, which was the first time since the onset of the disease. For next 3 days the patient's condition was stable with SaO₂ varying from 98% to 99 %.

During hospitalization the patient was treated with antibiotics (sumamed, augmentin), antiviral drug (remdesivir), probiotic (bulardi), bronchodilators (salbutamol), low molecular weight heparin (clexane), gastroprotective (controloc), hepatoprotective (livoex forte), corticosteroid (pronison, Lemod-solu), analgetic (paracetamol), vitamin C and oxygen therapy with proper rehydration.

Table 1. Main laboratory findings.

Analyte	Reference values	Day 1	Day 5	Day 8	Day 9	Day 11
WBC	4.0-10.0 (×10 ⁹ /L)	2.12 ↓		5.80		6.90
HCT	0.415-0.530 (L/L)	0.416		0.411 ↓		0.418
PLT	140-450 (×10 ⁹ /L)	130 ↓		394		464 ↑
PDW	12.0-16.5 (Ratio)			16.6 ↑		16.6 ↑
MVP	6.8-10.4 (fl)	9.7		6.4 ↓		6.9
CK	26-192 (IU/L)	241 ↑				86
GGT	7-50 (IU/L)	47				132 ↑
LDH	220-450 (U/L)	672 ↑				450
AST	0-40 (IU/L)	21		54 ↑		27
ALT	0-40 (IU/L)	20		135 ↑		88 ↑
CRP	<5.0 (mg/L)	43 ↑		11.1 ↑		6.9 ↑
FER	20-300 (ng/mL)					1529 ↑
D-dimer	<0.50 (ng/mL FEU)			0.49		0.42
IL-6	<7.0 (pg/mL)		<1.5		6.8	<1.5
Procalcitonin	0.5-2.0****					<0.20
Troponin	<0.0197 ng/mL					0.041
proBNP	negative < 125					75

* the first day in the table refers to the day of the first examination (June 29, 2021), while the fifth day from the onset of the disease is actually the second day of hospitalization. ** WBC – white blood cells, HCT – hematocrit, PLT – platelets, PDW – platelet distribution width, MPV – mean platelet volume, CK – creatin kinase, GGT – gamma glutamyl transferase, LDH – lactate dehydrogenase, CRP – C reactive protein, FER – ferritin, proBNP – brain natriuretic peptide, ↑ - increased level, ↓ - decreased level *** The table lists only the parameters that went beyond normal values during the patient's treatment; ****->2.0 risk for sepsis (ng/mL)



Figure 1. Chest radiographies during hospital treatment, done on day 1st, 6th and 10th day of hospitalization, respectively.

On the 11th day of hospitalization the patient was conscious, oriented, afebrile, eupnoic, cardiocirculatory stable, with SaO₂ 97%. PCR test was done again and the presence of the virus was confirmed. The patient was discharged home for quarantine, with therapy that included corticosteroids, a proton pump inhibitor, probiotic and dietary supplements to maintain normal function of liver and immune system. The results of laboratory analyses during hospitalization are shown in Table 1. Chest radiographies during hospital treatment, which demonstrate bilateral pneumonia and interstitial lung pattern, are shown in Figure 1.

DISCUSSION

Our patient with confirmed SARS-CoV-2 delta variant had mild clinical picture with bilateral pneumonia. His clinical picture was similar to alfa type of SARS-CoV-2.

According to the recent studies, signs and symptoms have slightly changed with this new variant from fever, cough and anosmia to headache, runny nose and sore throat (8). Apart from the normal complications of covid, delta variant can cause mucormycosis, known as “black fungus”, that induces infarction, necrosis and inflammation, provoking a fatality rate of almost 100% when the patient presents a severe mucormycosis (9). Related to the diagnosis, it is common to find lymphopenia, thrombocytopenia, high level of hepatic enzymes, high CRP and lactate and decreased albumin. Chest X-ray in patients with delta variant, shows in 50% normal findings, 11%-100% bilateral pneumonia, 1.5%-85% unilateral pneumonia and 13%-100% ground glass opacity (2,3).

Regarding vaccination status, our patient was not vaccinated. Studies suggest that Pfizer-BioNTech and AstraZeneca vaccines show a little less protection facing symptomatic infections from Delta than from Alpha variant (1,4). Pfizer-BioNTech vaccine is 88% effective and AstraZeneca 60% effective after the second dose. Moreover, people who have only received one dose of the vaccine are more likely to have the disease, because both

vaccines are only 33% effective after one dose. However, people with two doses have a high defense from hospitalization (96% for Pfizer-BioNTech and 92% for Oxford-AstraZeneca) (4,7,10). Unvaccinated people have more chances to be admitted to the hospital because of Delta variant COVID-19 than Alpha (4).

CONCLUSION

This case report should give insight to the clinicians in the clinical picture, laboratory results and radiological findings of the patient with delta variant of COVID-19. Our patient was young, unvaccinated and with bilateral pneumonia, which corresponds to the profile of hospitalized patients with COVID-19 with delta variant.

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