НАЦИОНАЛЬНЫЙ ЦЕНТР ЭКСПЕРТИЗЫ
лекарственных средств и медицинских изделий

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НАУЧНО-ПРАКТИЧЕСКИЙ, ИНФОРМАЦИОННО-АНАЛИТИЧЕСКИЙ ЖУРНАЛ ФАРМАЦИИ И ЗДРАВООХРАНЕНИЯ

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НАУЧНЫЙ И ИНФОРМАЦИОННО-АНАЛИТИЧЕСКИЙ ЖУРНАЛ

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Адрес редакции:
050004, РК, г. Алматы,
пр. Абылай хана, 63, оф. 305,
тел.: +7 (727) 273 11 45,
E-mail: pharmkaz@dari.kz;
веб-ресурс: www.pharmkaz.kz.

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+7 (727) 273 11 45

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S.N. KNAYATOVA[1], A.A. NAURYZBAYEVA[1], N.I. ABUBAKIROVA[1], R. TALGATKYZY1, YE.ZH. SADUAKASSOVA[1], A.K. BAIKADAM[1], ZH.S. AMANKULOVA[2]
[1]Asfendiyarov Kazakh National Medical University Almaty, Kazakhstan

EVALUATION OF VACCINATED AND UNVACCINATED PATIENTS WITH COVID-19 HOSPITALIZED IN THE INFECTIOUS DISEASE HOSPITAL

Resume
Relevance: *Nowadays thousands of people get sick and die from COVID-19. According to WHO statistics In Kazakhstan, from 3 January 2020 to 29 October 2021, there have been 1 015 439 confirmed cases of COVID-19 with 17 078 mortality cases. It mentions the problem of COVID-19 is acute not only in Kazakhstan, but also all around the world. As statistics indicate approximately 245 373 039 confirmed cases of COVID-19, including 4 979 421 deaths globally, around 6 838 727 352 vaccine doses have been administered, but the number of sick people is not decreasing rapidly, so the positive and negative sides of vaccination also will be evaluated in this research.*
Aim: *to describe the basic parameters and factors in COVID-19 patients and compare them between vaccinated and non-vaccinated patients admitted at infectious hospital in September. Objectives included analyzing the history of disease in patients with COVID-19 in the infectious hospital for September 2021 and giving a comparative evaluation to the patients who are vaccinated and unvaccinated using the data extracted from the history of disease.*
Materials and methods: *the retrospective study of the disease histories of patients hospitalized to the COVID-19 provisional hospital №12 "A-class medical" infectious hospital department during September 2021. Records from the histories of the disease including medical history recordings, physical examinations and laboratory evaluations collected from 116 patients. Based on the vaccination statuses patients were divided into two groups, vaccinated and unvaccinated. Different parameters including the age, gender, body mass index of the hospitalized patients was observed and described. The duration of the hospital stays, and laboratory data results were compared between the vaccinated and unvaccinated groups of female and male patients.*
Results: *laboratory data evaluation showed that there were differences in the results of the inflammation markers between the vaccinated and unvaccinated patients as well as between male and female patients in the relevant groups respectively. The most male vaccinated group had higher levels of inflammatory markers such as fibrinogen in the vaccinated male group compared to the unvaccinated. While in female vaccinated and unvaccinated groups were found significant differences between the means of the laboratory data evaluations. The conclusion is the quantity of bed days of vaccinated patients is less than in unvaccinated patients, so it can be suggested that vaccination affects the severity of the course of disease and results in decreased number of hospitals stay days.*
Prognostic Values: *vaccination provides direct protection of a vaccinated person from severe symptoms of the virus and is a safe way to limit the transmission of the disease by increasing the immunity of the population. However, achieving collective immunity in a short time seems unlikely since people have trust issues due to the lack of information and fact that the vaccines are brand new, and the effectiveness and the effects are still to be evaluated in upcoming years. There are doubts about whether vaccination is sufficiently effective in reducing the incidence of the population, but there are strict reasons to believe that vaccination is effective in preventing deaths and severity of disease.*
Key words: *COVID-19, history recordings, severity of disease, hospital stay, vaccination, laboratory findings, fibrinogen, D-dimer.*

С.Н. Кнаятова[1], А.А. Наурызбаева[1], Н.И. Абубакирова[1], Р. Талғатқызы[1], Е.Ж. Садуақасова[1], А.К. Байқадам[1], Ж.С. Аманкулова[2]
[1,2] С. Ж. Асфендияров атындағы Қазақ ұлттық медицина университеті Алматы, Қазақстан

ЖҰҚПАЛЫ АУРУЛАР АУРУХАНАСЫНА ЖАТҚЫЗЫЛҒАН COVID-19 ВАКЦИНАЦИЯЛАНҒАН ЖӘНЕ ВАКЦИНАЦИЯЛАНБАҒАН ПАЦИЕНТТЕРДІ КЕШЕНДІ БАҒАЛАУ

Өзектілігі: қазіргі уақытта мыңдаған адамдар ауырып, COVID-19-дан қайтыс болды. ДДҰ статистикасына сәйкес, Қазақстанда 2020 жылғы 3 қаңтардан бастап 2021 жылғы 29 қазанға дейін 1 015 439 расталған covid-19 оқиғасы, 17 078 өлім жағдайы тіркелді. COVID-19 ауруының проблемасы тек Қазақстанда ғана емес, бүкіл әлемде өткір болып отыр. Статистика көрсеткендей, шамамен 245,373,039 расталған COVID-19 жағдайы, оның ішінде 4,979,421 өлім, Дүниежүзілік вакцинация бағдарламасы аясында әлем бойынша халық вакцинаның шамамен 6 838 727 352 дозасын алды, бірақ науқастар саны пропорционалды түрде азайды және өсуді жалғастырды, сондықтан осы зерттеудің мақсаттарының бірі вакцинацияның ауруханада болу кезеңінде аурудың ағымына әсерін анықтау болды.

Мақсаты: COVID-19 пациенттерінің негізгі параметрлері мен факторларын сипаттау және оларды 2021 жылдың қыркүйегінде жұқпалы аурулар ауруханасына түскен вакцинацияланған және вакцинацияланбаған пациенттер арасында салыстыру. Тапсырмалар 2021 жылдың қыркүйегінде жұқпалы аурулар ауруханасындағы COVID-19 пациенттерінің медициналық тарихынан алынған мәліметтерді талдауды және вакцинацияланған және вакцинацияланбаған пациенттер арасында салыстырмалы бағалау жүргізуді қамтиды.

Материалдар мен әдістер: 2021 жылдың қыркүйегінде №12 "А-класс медициналық" COVID-19 уақытша ауруханасының жұқпалы аурулар бөліміне жатқызылған пациенттердің медициналық тарихын ретроспективті зерттеу. Медициналық тексерулер мен зертханалық зерттеулерді қоса алғанда, 116 пациенттен жиналған медициналық тарих жазбалары. Вакцинация жағдайына байланысты пациенттер екі топқа бөлінді: вакцинацияланған және вакцинацияланбаған. Ауруханаға жатқызылған пациенттердің жасын, жынысын, дене салмағының индексін қоса алғанда, әртүрлі параметрлер қаралды және сипатталды. Ауруханада болу ұзақтығы мен зертханалық зерттеулердің нәтижелері вакцинацияланған және вакцинацияланбаған әйелдер мен ерлер пациенттерінің топтары арасында салыстырылды.

Нәтижелер: зертханалық деректерді бағалау вакцинацияланған және вакцинацияланбаған пациенттер арасында, сондай-ақ тиісті топтардағы ерлер мен әйелдер арасындағы қабыну белгілерінің нәтижелерінде айырмашылықтар бар екенін көрсетті. Вакцинацияланған топтың ішінде ер адамдарда вакцинацияланбағандарға қарағанда қабыну белгілері жоғары болды. Вакцинацияланған және вакцинацияланбаған әйелдер тобында қабыну факторлары мен коагулограмманы қоса алғанда, зертханалық нәтижелерде айтарлықтай айырмашылықтар анықталды. Нәтижесінде вакцинацияланған пациенттердің төсек-күндерінің саны вакцинацияланбаған пациенттерге қарағанда аз деп есеп-

С.Н. Кнаятова[1], А.А. Наурызбаева[1], Н.И. Абубакирова[1], Р. Талгаткызы[1], Е.Ж. Садуакасова[1], А.К. Байкадам[1], Ж.С. Аманкулова[2]
[1,2] Казахский национальный медицинский университет имени С.Д.Асфендиярова Алматы, Казахстан

КОМПЛЕКСНАЯ ОЦЕНКА ВАКЦИНИРОВАННЫХ И НЕВАКЦИНИРОВАННЫХ ПАЦИЕНТОВ С COVID-19, ГОСПИТАЛИЗИРОВАННЫХ В ИНФЕКЦИОННУЮ БОЛЬНИЦУ

Актуальность: в настоящее время тысячи людей заболевают и умирают от COVID-19. Согласно статистике ВОЗ, в Казахстане с 3 января 2020 года по 29 октября 2021 года было зарегистрировано 1 015 439 подтвержденных случаев COVID-19 с 17 078 случаями смертности. Проблема заболеваемости COVID-19 стоит остро не только в Казахстане, но и во всем мире. Как показывает статистика, приблизительно 245 373 039 подтвержденных случаев COVID-19, включая 4 979 421 смертельных исходов, в рамках всемирной программы вакцинации по миру было получено населением около 6 838 727 352 доз вакцины, но количество больных уменьшалось не пропорционально и продолжало расти, поэтому одной из целей данного исследования было выявить влияние вакцинации на течение заболевания в период пребывания в стационаре.

Цель: описать основные параметры и факторы у пациентов с COVID-19 и сравнить их между вакцинированными и не вакцинированными пациентами, поступившими в инфекционную больницу в сентябре 2021 года. Задачи включали анализ истории болезни у пациентов с COVID-19 в инфекционной больнице за сентябрь 2021 года и проведение сравнительной оценки вакцинированных и не вакцинированных пациентов с использованием данных, извлеченных из истории болезни.

Материалы и методы: ретроспективное изучение историй болезни пациентов, госпитализированных в инфекционное отделение временной больницы №12 “А-класс медицинский” COVID-19 в сентябре 2021 года. Записи из истории болезни, включая медицинские осмотры и лабораторные исследования, собранные у 116 пациентов. В зависимости от статуса вакцинации пациенты были разделены на две группы: вакцинированные и не вакцинированные. Наблюдались и описывались различные параметры, включая возраст, пол, индекс массы тела госпитализированных пациентов. Продолжительность пребывания в больнице и результаты лабораторных исследований были сопоставлены между вакцинированными и не вакцинированными группами пациентов женского и мужского пола.

Результаты: оценка лабораторных данных показала, что существуют различия в результатах маркеров воспаления между вакцинированными и не вакцинированными пациентами, а также между пациентами мужского и женского пола в соответствующих группах. Среди вакцинированной группы мужчины имели более высокие уровни маркеров воспаления по сравнению с не вакцинированными. В то время как в группах вакцинированных и не вакцинированных женщин были обнаружены значительные различия результатов лабораторных включая факторы воспаления и коагулограмму. По итогу было посчитано что количество койко-дней у вакцинированных пациентов меньше, чем у не вак-

телді, сондықтан вакцинация аурудың ауырлығына әсер етеді және ауруханаларда болған күндер санының азаюына әкеледі деп болжауға болады.
Болашағы: вакцинация вакцинацияланған адамды вирустың ауыр белгілерінен тікелей қорғауды қамтамасыз етеді және халықтың иммунитетін жоғарылату арқылы аурудың таралуын шектеудің қауіпсіз әдісі болып табылады. Алайда, қысқа мерзімде ұжымдық иммунитетке қол жеткізу екіталай болып көрінеді, өйткені адамдарда ақпараттың жетіспеуі және вакциналардың мүлдем жаңа екендігі және тиімділігі мен салдары алдағы жылдары бағалануы мүмкін екендігі туралы сенім мәселелері бар. Вакцинация халықтың ауруын төмендетуде тиімді ме деген күмән бар, бірақ вакцинация вирусқа қарсы тиімді және аурудың ауырлығын жеңілдету арқылы аурудың ауырлығына әсер етеді деп айтуға толық негіз бар.
Түйінді сөздер: COVID-19, медициналық тарихы, аурудың ауырлығы, аурухана, вакцинация, зертханалық мәліметтер, фибриноген, Д-димер.

цинированных пациентов, поэтому можно предположить, что вакцинация влияет на тяжесть течения заболевания и следственно к уменьшению количества дней пребывания в больницах.
Перспективность: вакцинация может обеспечить прямую защиту вакцинированного человека от тяжелых симптомов вируса и является безопасным способом ограничения передачи заболевания за счет повышения иммунитета населения. Однако достижение коллективного иммунитета за короткое время представляется маловероятно, поскольку у людей есть проблемы с доверием из-за недостатка информации и того факта, что вакцины совершенно новые, а эффективность и последствия еще предстоит оценить в ближайшие годы. Существуют сомнения в том, является ли вакцинация достаточно эффективной в снижении заболеваемости населения, но есть веские основания полагать, что вакцинация эффективна против вируса и влияет на тяжести заболевания облегчая степень тяжести течения заболевания.
Ключевые слова: COVID-19, история болезни, тяжесть заболевания, стационар, вакцинация, лабораторные данные, фибриноген, Д-димер

Introduction

In Wuhan, China, a new highly pathogenic human coronavirus capable of causing severe acute respiratory syndrome (SARS) was identified as the cause of the coronavirus disease 2019 (COVID-19) outbreak, which quickly spread from China to other countries, causing a pandemic with alarming morbidity and mortality associated with its possible severe clinical picture, namely, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1,2].

COVID-19 disease includes a wide spectrum of clinical manifestations, ranging from asymptomatic, mild symptoms to acute respiratory distress syndrome (ARDS) and death [3]. According to reports, this disease has a 1-3% mortality rate, which is increased in elders, particularly men [4]. The mortality rate also varies by geographical area, which might be attributed to varied immunological responses in populations in various locales [5]. Definitive and complete treatment for COVID-19 is still undefined. In addition, most treatment approaches used all over the world are intended to reduce disease symptoms and prevent the progression of disease in the patients [6]. Successful immunizations are one of the foremost considerable preventive measures to stop increasing infectious diseases [7].

A massive vaccination program has been initiated worldwide since December 2020. At the national and international levels, two matrix RNA (mRNA) vaccines, three adenovirus vector vaccines, four inactivated vaccines, and two protein subunit-based vaccines have been validated for use against COVID-19 [8,9]. In comparison to other vaccines, COVID-19 vaccines have been developed and used in a relatively short period. As a result, COVID-19 vaccine efficacy, safety, and side effects should be constantly monitored and researched [7,8].

Nowadays thousands of people get sick and die from COVID-19. According to WHO statistics in Kazakhstan, from 3 January 2020 to 29 October 2021, there have been 1 015 439 confirmed cases of COVID-19 with 17 078 mortality cases; it mentions the problem of COVID-19 is acute not only in Kazakhstan but also all around the world. As statistics indicate approximately 245 373 039 confirmed cases of COVID-19, including 4 979 421 deaths globally, around 6 838 727 352 vaccine doses have been administered, but the number of sick people is not decreasing rapidly.

The aim of our research is to describe the basic parameters and factors in COVID-19 patients and compare them between vaccinated and unvaccinated patients admitted to the infectious hospital in September 2021. Objectives include analyzing the history of disease in patients with COVID-19 in the infectious hospital for September 2021 and giving a comparative evaluation to the patients who are vaccinated and unvaccinated using the data extracted from the history of the disease.

Materials and methods

The retrospective observational analysis of 116 patients hospitalized during September 2021 to the provisional hospital №12 “A-class medical” infectious hospital department was conducted. All hospitalized patients were tested for the COVID-19 using the polymerase chain reaction (PCR) test and Computed Tomography (CT) scan were performed to identify pneumonia. All patients tested positively for the COVID-19 according to the PCR test results and were categorized as having mild and moderate severity of disease with different degrees of pneumonia according to CT scan results as no signs of pneumonia, mild <25% of damage and 25-50% of damage, corresponding to different stages of lung damage CT0, CT1 and CT2 respectively. Records from the histories of the disease including the duration of hospital stay, medical history recordings, physical examinations,

Table 1 - Demographics and laboratory data characteristics of patients population

	Vaccinated (n=47)	Unvaccinated (n=69)	P-value
Age (years, SD)	51 ± 14	53 ± 16	0.4887
Body mass index (kg/m2, SD)	27.4 ± 4.3	25.9 ± 4.9	0.092
Female - n (%)	26 (55%)	46 (67%)	0.1928
Bed days (days, SD)	10.9 ± 1.6	12.2 ± 2.6	0.0028
Obesity - n (%)	10 (21.2%)	10 (14.5%)	0.3501
CHF - n (%)	1 (2.12%)	1 (1.45%)	0.7863
HTN - n (%)	10 (21.3%)	18 (26.1%)	0.5549
DM - n (%)	5 (10.6%)	2 (2.9%)	0.0883
D-dimer (mg/L, SD)	1.02 ± 1.91	1.16 ± 1.68	0.6777
CRP (mg/L, SD)	31.8 ± 31.6	48.2 ± 141.6	0.4371
Ferritin (ng/ml, SD)	389 ± 386	389.3 ± 386	0.9967
PT (sec, SD)	13 ± 1.15	12.8 ± 1.15	0.3597
PTI (%, SD)	97.3 ±13.7	90.5 ±7.7	0.0009
INR (SD)	1.07 ± 0.09	1.07 ± 0.09	1
aPTT (sec, SD)	32.3 ± 4.64	32.1 ±5.8	0.844
Fibrinogen (ng/mL, SD)	4.06 ± 0.97	3.77 ± 0.96	0.844

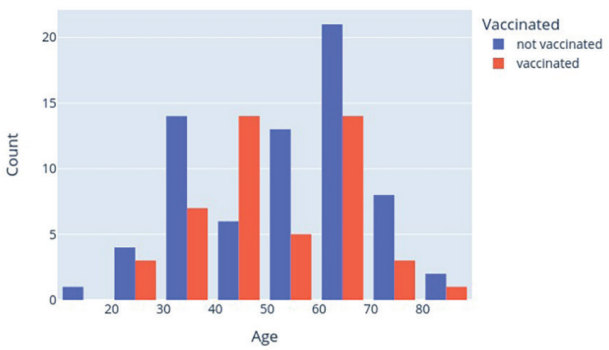


Figure 1

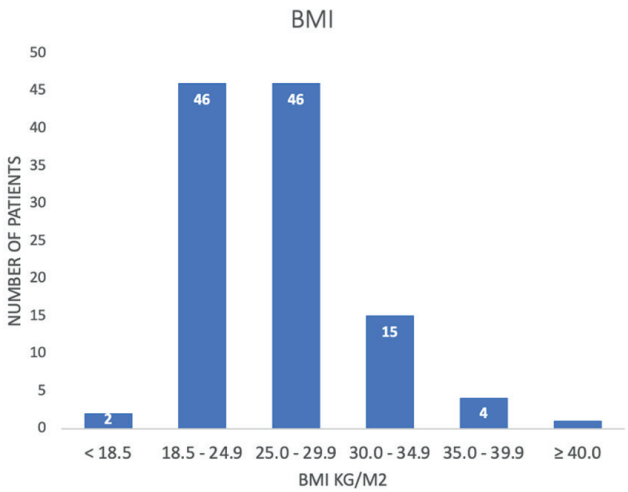


Figure 2

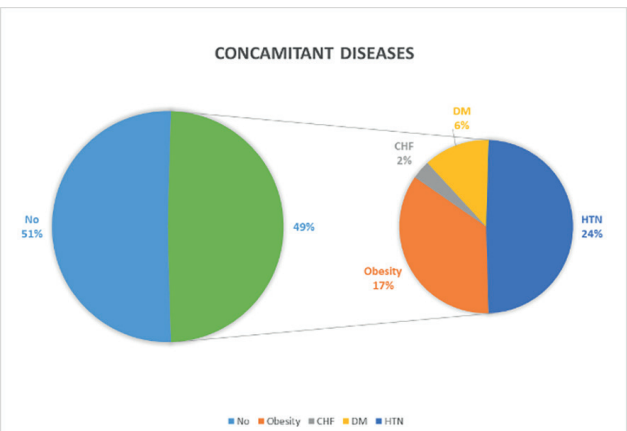


Figure 3

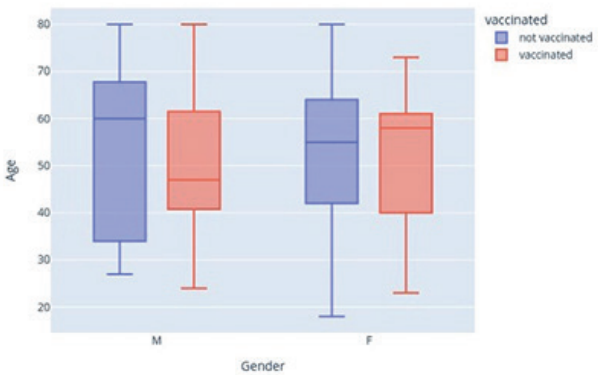


Figure 4

Table 2

	Vaccinated female (n=26)	Unvaccinated female (n=46)
D-dimer (mg/L, SD)	0.7 ± 1.03	1.12 ± 1.73
CRP (mg/L, SD)	23.7 ± 22.1	48.6 ± 168
Ferritin (ng/ml, SD)	258.15 ± 227.3	297 ± 236
PT (sec, SD)	12.8 ± 1.2	12.5 ± 0.87
PTI (%, SD)	86.9 ± 17.4	92.1 ± 6.3
INR (SD)	1.07 ± 0.09	1.05 ± 0.07
aPTT (sec, SD)	32.2 ± 4.9	31.9 ± 5.8
Fibrinogen (ng/mL, SD)	3.62 ± 0.95	3.52 ± 0.75
Bed days (days SD)	10 ± 2	12 ± 2

CRP- C-reactive protein, PT – prothrombin time, PTI – prothrombin time index, INR- International Normalized Ratio, aPTT- Activated Partial Thromboplastin Time.

Table 3

	Vaccinated male (n=16)	Unvaccinated male (n=23)
D-dimer (mg/L, SD)	1.62 ± 3.14	1.21 ± 1.6
CRP (mg/L, SD)	36.7± 32.2	47.1 ± 60.3
Ferritin (ng/ml, SD)	468± 310.1	568.2 ± 539
PT (sec, SD)	12.9± 1.1	13.1 ± 1.5
PTI (%, SD)	88.6± 7.38	87.2 ± 9.1
INR (SD)	1.08± 0.09	1.1 ± 0.1
aPTT (sec, SD)	31.9± 4.1	32.4 ± 5.7
Fibrinogen (ng/mL, SD)	4.49± 0.68	4.13 ± 0.98
Bed days (days, SD)	10 ± 1	14 ± 2

CRP- C-reactive protein, PT – prothrombin time, PTI – prothrombin time index, INR- International Normalized Ratio, aPTT- Activated Partial Thromboplastin Time.

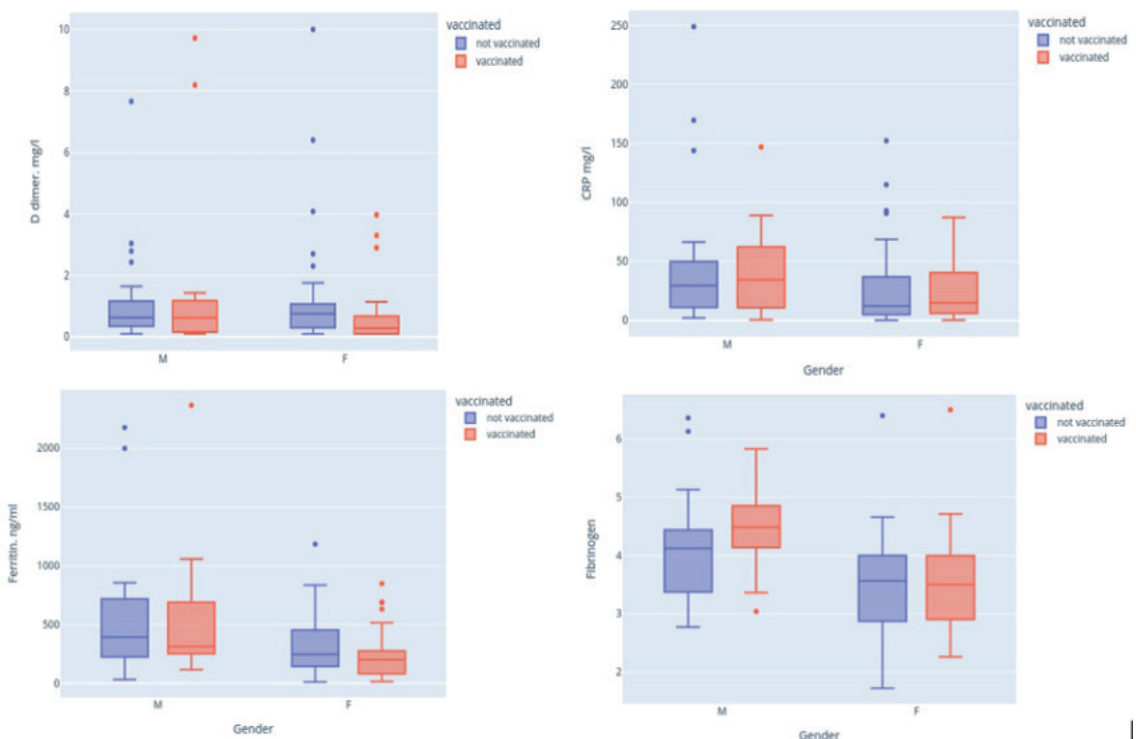
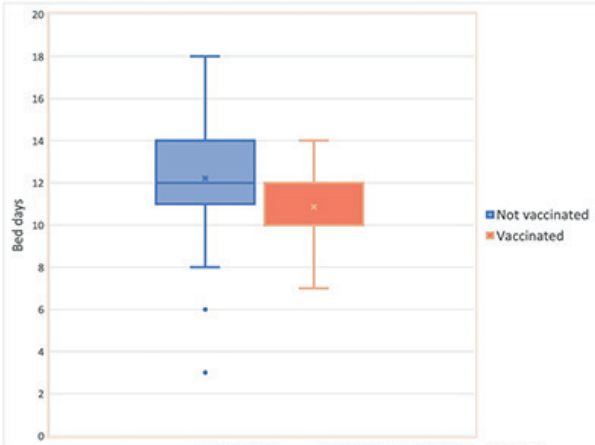


Figure 5



	Vaccinated (n=47)	Unvaccinated (n=69)	P-value
Bed days (days, SD)	10.9 ± 1.6	12.2 ± 2.6	0.0028

Figure 6

laboratory evaluations were collected from all the 116 patients. Medical history recordings included information about the age, sex, vaccination status and concomitant diseases. Physical examination evaluated the body mass index (BMI) of patients. Laboratory evaluations included the coagulation profile indexes, inflammatory markers, liver enzymes.

Based on the vaccination status 116 patients were divided into the two groups, vaccinated and unvaccinated*. Duration of the hospital stay as number of bed days, clotting factors such as prothrombin time (PT), prothrombin index (PTI), international normalized ratio (INR), activated thromboplastin time (aPTT), fibrinogen, D-dimer, ferritin, and C-reactive protein (CRP) values were compared between these groups.

(*note: vaccinated and unvaccinated against COVID-19 with any available vaccine on that time on territory of the Republic of Kazakhstan (SputnikV)

Statistical analysis

Descriptive statistical analysis was used to indicate the frequency and percentile of the categorical data (age, sex, concomitant diseases). For continuous data were used median and quartile intervals. Differences between groups were evaluated using t-test and generated p-values, the significance were evaluated according to $p < 0.05$, with 95 % confident interval (CI) As a tool for descriptive statistical analysis as well was used PYTHON software.

Results

There were 117 patients hospitalized in September 2021 to the provisional hospital №12 “A-class medical” infectious hospital department. 116 patients were included to study by the inclusion criteria as the positive COVID-19 PCR test and mild to moderate course of the disease were satisfied. The mean age of the patients (n=116) of study was 52 ± 15 years, in total 49% had concomitant diseases among them 17% had obesity, 24% had hypertension, 6% had diabetes, 2% had preexisting heart disease as chronic heart failure (Figure 2.), the mean body mass index (BMI) was 26.6 ± 4.8 kg/m2, majority of the patients population were in group BMI 18.5-24.9kg/m2 and 25-29.9kg/m2 which according to the WHO BMI levels classification corresponds to healthy weight and overweight (not obesity) respectively (Figure 1). Demographics and laboratory data characteristics are shown in Table 1.

CHF – chronic heart disease, HTN – hypertensive disease, DM- diabetes, CRP- C-reactive protein,vPT – prothrombin time, PTI – prothrombin time index, INR- International Normalized Ratio, aPTT- Activated Partial Thromboplastin Time.

The observation, description, and comparison of parameters such as the age, gender, BMI, and concomitant diseases among the patient population and between vaccinated and unvaccinated resulted in the following. As the average age of the patient population was 52 years, most of the patients almost in every age group were not vaccinated, exception was the group aged from 40-50y.o. as seen in Figure 1. The number of patients with BMI 18.5-24.9kg/m2 and 25-29.9kg/m2 prevailed among all patient population, which according to the BMI levels classification corresponds to healthy weight and overweight (not obesity) respectively (Figure 2).

Almost half of the patient population hospitalized with mild to moderate course of coronavirus infection, both vaccinated and unvaccinated, had been registered with the chronic diseases above mentioned as concomitant diseases to the main infection (Figure 3). Despite the presence of the chronic diseases in the medical histories, patients did not refuse the vaccine as those diseases are not classified to be direct contraindications for vaccination according to the order of the Minister of Health of the Republic of Kazakhstan "On approval of Sanitary rules "Sanitary and epidemiological requirements for preventive vaccinations to the population" dated June 13, 2018, No. 361.

Considering such a parameter as gender the average percentage of male and female patients, as well as the mean age of each gender group, were compared between the vaccinated and unvaccinated patients. Among all patients (n=116) 62% were females which amounted to 55% of the vaccinated patients and 67% of the unvaccinated patients, comparing to the number of male patients in the vaccinated and unvaccinated group can be assumed that female part of the population got vaccinated less willingly and did not get vaccine as much as male patients (Figure 4).

Duration of the hospital stay as a number of bed days, clotting factors such as prothrombin time (PT), prothrombin index (PTI), international normalized ratio (INR), activated thromboplastin time (aPTT), fibrinogen, D-dimer, ferritin and C-reactive protein (CRP) values were compared between vaccinated and unvaccinated population of patients, moreover, each laboratory data also was evaluated considering different gender, groups been divided as male group and female group among vaccinated and unvaccinated. The following Table 2 and Table 3 show the laboratory data characteristics in the groups of vaccinated/unvaccinated female and vaccinated/unvaccinated male patients respectively.

The results of the laboratory data such as inflammatory markers, including CRP, ferritin, fibrinogen, and d-dimer and coagulation profile indexes as PT, PTI, INR, aPTT (Figure5)

showed slight differences difference between the groups, neither in between vaccinated male and unvaccinated male patients nor between vaccinated female and unvaccinated female patients. The significant differences were in the results of CRP, PT and PTI between the vaccinated and unvaccinated groups of female patient population, the mean CRP value, PT value, PTI value of vaccinated female group (n=26) were 23.7 ± 22.1 mg/L, 12.8 ± 1.2 sec, 86.9 ± 14.4 and values of unvaccinated female group (n=46) were 48.6 ± 57.2 mg/L, 12.5 ± 0.87 sec, 92.1 ± 6.3 sec respectively, with confidence interval of 95%, p-value < 0.05 (Table 2). The duration of hospital stay in days showed significant differences between the vaccinated and unvaccinated groups of both males and females (Figure 6), the mean number of bed days among vaccinated female (n=26) was 10 ± 2 days and unvaccinated female (n=46) was 12 ± 2 days with p = 0.0001 and <0.05 (Table 2), while number of bed days among vaccinated male (n=16) was 10 ± 1 days and unvaccinated male (n=23) was 14 ± 2 days, with p < 0.0001 (Table 3). Based on the obtained results, the vaccinated patient population had fewer days of hospital stay among the whole patient population and lower results of the inflammatory factors among the vaccinated female patient population, so it can be assumed that vaccinated patients had a milder course of the infection and shorter recovery course of the disease.

Whereas there was shown no significant difference in laboratory data between the vaccinated and unvaccinated groups, in one parameter such as fibrinogen was observed the significant difference in the group of vaccinated patient population. Compared between vaccinated male groups and vaccinated female groups the fibrinogen levels were much higher in male vaccinated group (Figure 5).

Discussion

The connection between hemostasis alterations and infections is widely established. Already at an early stage of bacterial infections, a change in hemostasis, a state of hypercoagulation defined by an elevated amount of D-dimer, may be recognized, which can develop into disseminated intravascular coagulation (DIC syndrome) [10]. Viral infections, on the other hand, can result in serious consequences such as acute respiratory distress syndrome (ARDS) and multiple organ failure (MOF), which are two disorders that are frequently related to hypercoagulation and DIC syndrome [11]. Tang et al. found that aberrant coagulation findings, particularly notably high D-dimer, and Fibrin Degradation Products (FDP), were prevalent in COVID-19 fatalities [12]. Micco and al. discovered that a higher amount of fibrinogen is linked to a more severe type of COVID-19, defined by SARS [13].

Concerning this clinical setting, our study was to evaluate all parameters, laboratory, and physical data, in all patients, vaccinated and unvaccinated, admitted to the hospital and compare their indicators with each other. Our data showed that obese and overweight patients made up the most of hospital admissions regardless of vaccination status. The comorbidities of the patients included in this study played an important role in this.

The inflammatory markers (CPR, ferritin, d-dimer) by gender showed differences between vaccinated and unvaccinated Covid-19 patients. The laboratory findings among the group of vaccinated patients were evaluated to be more favorable compared to the group of non-vaccinated. On the other hand, the laboratory data evaluation showed that the males mostly vaccinated group had higher levels of the inflammatory markers such as fibrinogen in the vaccinated male group compared to unvaccinated. While in female vaccinated and unvaccinated groups were found no significant differences. Other laboratory findings such as clotting factors and blood biochemistry were evaluated, and the results showed no significant changes and differences between the vaccinated and unvaccinated groups.

Despite that the differences in the results between vaccinated and unvaccinated patients were significant only in several parameters and not in between all parameters of all groups, we assume that vaccination has a favorable effect in limiting the severity of the illness in patients and the spread of this virus at that moment, due to the minimal number of patients in our research.

Since the study enrolled a few subjects (n=116), there is possibility of more than 20% chance that a significant difference was missed, study might not have enough statistical power to detect a difference so the possible type II error. The enrollment of more subjects so the increased sample size at least equal to 230 patients would make study more precise in detecting difference and minimize the type II error.

Conclusion

Relying on the database of our research vaccination cannot totally prevent illness and the severity of concomitant disease, but it could protect a vaccinated person from severe symptoms of the virus and its safe way to limit the transmission and spreading of virus by increasing the immunity of the population. Almost equal number of unvaccinated and vaccinated patients in our project were directly affected by the results of the investigation. The quantity of bed days of vaccinated patients is less than in unvaccinated patients, so we can suggest that vaccination positively affects the number of bed days and severity of the disease. However, achieving collective immunity in a short time seems unlikely due to the insufficient number of vaccines and technological limitation of its production.

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Авторлардың үлесі. Барлық авторлар осы мақаланы жазуға тең дәрежеде қатысты.
Мүдделер қақтығысы – мәлімделген жоқ.
Бұл материал басқа басылымдарда жариялау үшін бұрын мәлімделмеген және басқа басылымдардың қарауына ұсынылмаған.
Осы жұмысты жүргізу кезінде сыртқы ұйымдар мен медициналық өкілдіктердің қаржыландыруы жасалған жоқ.
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Contact details
[1]**Knayatova S.N.** intern of 7th course, S.D. Asfendiyarov KazNMU, sakosha1405@gmail.com, tel. 87053177890, Almaty
[1]**Nauryzbayeva A.A.** intern of 7th course, S.D. Asfendiyarov KazNMU, a.n.anu@mail.ru, tel. 87029779337, Almaty
[1]**Abubakirova N.I.** intern of 7th course, S.D. Asfendiyarov KazNMU, 11l.nafissaa@gmail.com, tel. 87477369851, Almaty
[1]**Talgatkyzy R.** intern of 7th course, S.D. Asfendiyarov KazNMU, ramina98@gmail.com, tel. 87751346006, Almaty
[1]**Saduakassova**[1] Ye.Zh. intern of 7th course, S.D. Asfendiyarov KazNMU, saduakassova2020@gmail.com, tel. 87479586032, Almaty
[1]**Baikadam A.K.** intern of 7th course, S.D. Asfendiyarov KazNMU, baikadam.a.k@gmail.com, tel. 87774227928, Almaty
[2]**Amankulova Zh.S.** assistant professor of the Department of GMP 2, S.D. Asfendiyarov KazNMU, amankulova.j@kaznmu.kz, tel. 87772580090, Almaty

Контактные данные
[1]**Кнаятова С.Н.** интерн 7 курса, КазНМУ им. С.Д. Асфендиярова, sakosha1405@gmail.com, тел 87053177890, г.Алматы
[1]**Наурызбаева А.А.** интерн 7 курса, КазНМУ им. С.Д. Асфендиярова, a.n.anu@mail.ru, тел 87029779337, г.Алматы
[1]**Абубакирова Н.И.** интерн 7 курса, КазНМУ им. С.Д. Асфендиярова, 11l.nafissaa@gmail.com, тел 87477369851, г. Алматы
[1]**Талгаткызы Р.** интерн 7 курса, КазНМУ им. С.Д. Асфендиярова, ramina98@gmail.com, тел 87751346006, г.Алматы
[1]**Садуакасова Е.Ж.** интерн 7 курса, КазНМУ им. С.Д. Асфендиярова, saduakassova2020@gmail.com, тел 87479586032, г. Алматы
[1]**Байкадам А.К.** интерн 7 курса, КазНМУ им. С.Д. Асфендиярова, baikadam.a.k@gmail.com, тел 87774227928, г.Алматы
[2]**Аманкулова Ж.С.** доцент кафедры ОВП 2, КазНМУ им. С.Д. Асфендиярова, amankulova.j@kaznmu.kz, тел 87772580090, г.Алматы

ФАРМАКОПЕЯ

ЕВРАЗИЙСКОГО ЭКОНОМИЧЕСКОГО СОЮЗА

ВОЗРОЖДЕНИЕ ЧУВСТВ ОБОНЯНИЯ НАЧИНАЕТСЯ,

ДЫШИТЕ КОМФОРТНО И ГЛУБОКО!

Apisal Dead Sea Jet, спрей назальный, 125 мл для взрослых и детей представляет собой изотонический раствор воды Мертвого моря, обогащенный минералами, такими как Na, K, Mg, Ca, Br и Zn

Благодаря наличию минералов, морская вода оказывает смягчающий эффект на слизистую оболочку верхних дыхательных путей и оказывает противовоспалительное действие

Область применения:

- профилактика и лечение острых и хронических воспалительных заболеваний полости носа, околоносовых пазух и носоглотки инфекционные, аллергические, атрофические
- ежедневное использование во время эпидемии сезонного аллергического ринита и гриппа (профилактика)
- ежедневная гигиена полости носа

Регистрационное удостоверение РК-ИМН-5№020954. Дата государственной регистрации (перерегистрации): 28.08.2020 г., действительно до: 28.08.2025 г.
Побочные действия (воздействие, индивидуальная непереносимость): Не выявлены.
Противопоказания для применения: Нет ограничений по применению продукта.
Производитель: Amman Pharmaceutical Industries, Иордания. Уполномоченный представитель производителя на территории РК:
ТОО «R.T.A. GROUP». Республика Казахстан, г. Алматы, Алмалинский район, микрорайон Таста-3, ул. Аносова, д. 34, кв.34, тел.: +7 701 953 82 57

САМОЛЕЧЕНИЕ МОЖЕТ БЫТЬ ВРЕДНЫМ ДЛЯ ВАШЕГО ЗДОРОВЬЯ ПЕРЕД НАЗНАЧЕНИЕМ И ПРИМЕНЕНИЕМ ВНИМАТЕЛЬНО ПРОЧИТАТЬ ИНСТРУКЦИЮ ПО МЕДИЦИНСКОМУ ПРИМЕНЕНИЮ

API
Amman Pharmaceutical Industries
شركة عمّان للصناعات الدوائية