RESEARCH ARTICLE

Retrospective analysis of COVID-19 patients in the region of Eastern Achaia, Greece, in a Primary and Secondary Healthcare Setting. Could initial laboratory findings and age prejudge patients' outcome?

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Abstract

Background:
Since December 2019 mankind is agonized over the deadly coronavirus disease 2019 (COVID-19) which is due to the novel coronavirus (2019-nCoV) or Severe Acute Respiratory Syndrome Coronavirus-2 (Sars-cov-2).
Methods: In this retrospective study, laboratory findings and demographic features form all confirmed COVID-19 patients who attended the Emergency Department of both branches of our hospital during the first semester of 2021 were collected and analyzed. The working hypothesis was that initial laboratory data at the time the patients seeked medical assistant for the first time, regardless of comorbidities and day of onset of symptoms, can help predict patients' outcome. Demographic data and laboratory tests were compared between hospitalized and non-hospitalized patients.
Results: Data of 270 patients were collected and analyzed retrospectively. 31 blood measurement parameters performed in both hospital branches were compared between hospitalized and non-hospitalized patients. Of those, WBC count ($p=0.016$), neutrophil percentage ($p<0.001$), lymphocyte percentage ($p<0.001$), platelet count ($p=0.041$), glucose ($p<0.001$), urea ($p<0.001$), creatinine ($p<0.001$), SGOT ($p=0.024$), CK ($p<0.053$), LDH ($p<0.001$), GGT ($p<0.001$), sodium ($p<0.001$), calcium ($p<0.001$), high sensitivity Troponin I ($p<0.001$), and ferritin levels ($p<0.001$), proved statistically significant. Regarding demographic data, age was significantly linked to patients' survival.
Conclusion: Our data suggest that common initial laboratory findings of COVID-19 patients who seek for the first-time medical assistant regardless of comorbidities and time from onset of symptoms can give clues to the patient outcome. Age is also important for patients' survival. Especially in a Primary Health Care Setting, common blood parameters like WBC count, neutrophil and lymphocyte percentage, platelet count, glucose, urea, creatinine, SGOT, CK, LDH, GGT, sodium, calcium, high sensitivity Troponin I, and ferritin levels, could be really helpful to predict disease severity.
Keywords: COVID-19, Sars-cov-2, initial laboratory tests, patient's outcome, Primary Health Care Setting, Secondary Health Care Setting

1. Introduction

Since December 2019 humanity has come up against the deadly coronavirus disease 2019 (COVID-19) which is due to the novel coronavirus (2019-nCoV) or Severe Acute Respiratory Syndrome Coronavirus-2 (Sars-cov-2).[1] In a turmoil of lockdowns and reopening of tourism and activities of all sorts, Greece has come up against a rise in COVID-19 patients from January 2021 to June 2021.[2] During this time period, also vaccinations in healthcare workers and older population commenced.[3]

The clinical spectrum of COVID-19 varies widely, from asymptomatic disease to pneumonia and life-threatening complications, including acute respiratory distress syndrome (ARDS), multisystem organ failure and ultimately death.[4] In the present study data were collected from General Hospital of Eastern Achaia, Greece, which has two branches. The first one, located in the city of Kalavrita is a

Primary Health Care Setting. The second branch is in the city of Aigio and is both a Primary and Secondary Health Care Setting. Both hospital branches treated COVID-19 symptomatic patients in the Emergency Department. Suspect patients who needed hospitalisation were admitted in specially designed rooms until the confirmatory real-time PCR (RT-PCR) assay for SARSCoV-19 and then were transferred to Tertiary Health Care Settings in the area for further treatment. The initial laboratory profile of the COVID-19 patients who attended the Emergency Department was retrospectively analyzed. The present study focuses on the laboratory findings of these patients at the time they sought help at the Emergency Department for the first time, regardless of concomitant diseases or days from onset of symptoms as a guide to patients' outcome. A total of 31 parameters performed by the Departments of Microbiology of both hospital branches in an emergency setting were included. Certain demographic features like age, gender, days of hospitalisation till recovery or death were also included to characterize more severe disease. Our data suggest that common initial laboratory findings of COVID-19 patients who seek for the first-time medical assistant regardless of comorbidities and time from onset of symptoms can give clues to the patients' outcome. Age is also important for patients' survival. Especially in a Primary Health Care Setting, parameters like WBC count, neutrophil and lymphocyte percentage, platelet count, glucose, urea, creatinine, SGOT, CK, LDH, GGT, sodium, calcium, high sensitivity Troponin I, and ferritin levels, could be helpful to prejudge disease severity. This study is pioneer for Greece as to our knowledge no such assay has been attempted including so many blood measurement parameters in symptomatic patients at the time of COVID-19 diagnosis.

2. Methods

All patients who attended the Emergency Department of both hospital branches with fever, cough and fatigue as the main symptoms and proved to be COVID-19 positive with RT-PCR on the nasopharynx obtained swabs, were enrolled in the present study. Demographic features as age and sex were also included. Their initial laboratory findings were retrospectively analyzed. The working hypothesis was that certain initial laboratory findings the time the patients firstly seek medical assistance can help predict the severity of disease and patient outcome. In the present study none of the adult patients who proved COVID-19 positive and were treated at the Emergency Department of our Hospital were excluded. In the region of Eastern Achaia, to our knowledge, 270 new cases of adult symptomatic patients were diagnosed and seeked medical attention to our hospital. All these patients were included in the present study. Though the sample size seems small, the authors of the present study consider it representative.

To compare laboratory findings, the patients were divided into two groups: those who were hospitalized and those who recovered at home. Then, comparison of the laboratory findings of both categories of patients was performed. In addition, demographic features like sex, age, days of hospitalisation were compared to search possible correlates to severe illness and death. Blood samples were obtained by the patients under strict precautions and sent to the laboratories of both hospitals. The laboratory findings selected for comparison in the present study were those that were routinely performed in the Emergency Departments of both hospital branches at the time:

- White blood cells count (WBC). Pathologic values were considered above >10000/mm^3 or below 4000/mm^3
- Neutrophils percentage (NEUT). Pathologic values were considered above 75% or below 40%
- Lymphocytes percentage (LYMPH). Pathologic values were considered above 45% or below 20%
- Monocytes percentage (MONO). Pathologic values were considered above 7.0% or below 3.0%
- Eosinophils percentage (EOS). Pathologic values were considered above 5.0%
- Basophils percentage (BAS). Pathologic values were considered above 2.0%
- Red Blood Cells count (RBC). Pathologic values were considered above 5500000/mm^3 or below 4500000/mm^3
- Hemoglobin (HGB). Pathologic values were considered above 17.0 g/dL or less than 14.0 g/dL for men and above 16.0 g/dL or less than 12.0 g/dL for women
- Hematocrit (HCT). Pathologic values were considered above 52% or less than 45% for men and above 48% and below 36% for women
- Mean Corpuscular Volume (MCV). Pathologic values were considered above 96 fL or less than 84 fL for men and above 96 fL or below 76 fL for women
- Mean corpuscular hemoglobin (MCH) measurement. Pathologic values were considered above 32 pg or below 27 pg
- Mean corpuscular hemoglobin concentration (MCHC). Pathologic values were considered above 36 g/dl or less than 30 g/dl
- Platelet count (PLT). Pathologic values were considered above 350000/mm^3 or less than 150000/mm^3
- Blood glucose levels (glucose). Pathologic values were considered above 110 mg/dl or less than 70 mg/dl
- Urea (urea). Pathologic values were considered above 50 mg/dl or less than 10 mg/dl
- Creatinine (creatinine). Pathologic values were considered above 1.30 mg/dl
- Glutamic-oxaloacetic transaminase (SGOT). Pathologic values were considered above 37 IU/L or below 15 IU/L
- Glutamic Pyruvic Transaminase (SGPT). Pathologic values were considered above 78 IU/L or less than 12 IU/L
- Lactate Dehydrogenase (LDH). Pathologic values were considered above 190 U/L or less than 100 U/L
- Creatine Kinase (CK). Pathologic values were considered above 308 IU/L or less than 26 IU/L
- Creatine kinase myocardial band (CK-MB). Pathologic values were considered above 25 IU/L or less than 7 IU/L
- Gamma-glutamyl Transferase (GGT). Pathologic values were considered above 85 IU/L or less than 5 IU/L
- C-Reactive Protein (CRP). Pathologic values were considered above 0.90 mg/dl
- Alkaline Phosphatase (ALP). Pathologic values were considered above 129 IU/L
- Serum amylase (AMYLASE). Pathologic values were considered above 115 IU/L
- Serum albumin levels (albumin). Pathologic values were considered above 5.0 gr/dl

- Potassium (potassium). Pathologic values were considered above 5.1 mmol/l or below 3.5 mmol/l
- Sodium (sodium). Pathologic values were considered above 145 mmol/l or less than 136 mmol/l
- Calcium (calcium). Pathologic values were considered above 10.1 mg/dl or below 8.5 mg/dl
- High sensitivity Troponin I. Pathologic values were considered above 34.2 pg/ml for men and above 15.6 pg/ml for women
- Ferritin. Pathologic values were considered above 274 ng/ml or less than 28 ng/ml for men and above 159 ng/ml or less than 6 ng/ml for women

3. Statistical analysis

Statistical analyses were performed using the software Excel (Microsoft, Redmond, WA, USA). Comparisons of the possible relations of laboratory findings between hospitalized and non-hospitalized COVID-19 patients were performed by Chi-Square tests and Spearman's rho correlation coefficient test by Statistical Package for the Social Sciences (SPSS) version 25.0. Two-sided comparisons with a P-value less than .05 were considered significant.

4. Results

A total of 270 patients were enrolled in the present study, 135 males (50%) and 135 females (50%). 94.81% of patients were of Greek origin. All attended the Emergency Department of both hospital branches complaining for fever, cough and fatigue as the main symptoms and proved COVID-19 positive. All patients were found SARS-CoV-2 positive from 1st January 2021 to 30th June 2021. Of those, 102 (37. 8%) patients were hospitalized, whereas the rest (62.2%) were treated and recovered at home in a Primary Health Care Setting. Of the hospitalized patients, 29 died (13 men and 16 women). The median age of male patients was 54.6 years. The median age of female patients was 56.8 years. The median age of hospitalized patients was 65.97 years, whereas the mean age of the patients who recovered at home was 47.94 years.

4.1. Laboratory testing results

Laboratory testing results of 31 blood and serum parameters were retrieved and analyzed respectively from day one the patients seeked medical assistance.

53.3% of the patients with pathologic WBC count were hospitalized. 65.1% of non-hospitalized patients had normal WBC count. All patients who died had average WBC count above 10000/mm^3. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized ones in relation to the normal or abnormal values of the WBC. It was found that there is a statistically significant relationship in this comparison ($p=0.016$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (tables 1a, 1b, and 40).

Regarding the percentage of neutrophils, 68.7% of hospitalized patients had abnormal values. The patients who died had an average percentage of neutrophils above 80.18%. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of the NEUT. It was found that there is a statistically significant relationship in this comparison ($p<0.001$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (tables 2a, 2b, 40).

Pathological rates of lymphocytes were observed in 51.5% of hospitalized patients. 75.7% of non-hospitalized patients had normal values. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of the LYMPH. It was found that there is a statistically significant relationship in this comparison ($p<0.001$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (table 3a, 3b).

Regarding monocytes, eosinophils, and basophils percentage, a Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values. It was found that there is no statistically significant relationship in this comparison ($p=0.211$, $p=0.820$, and $p=0.408$, respectively). (Tables 4a, 4b, 5a, 5b, 6a, 6b).

Red blood cell count in both hospitalized and non-hospitalized patients showed no statistically significant relationship ($p=0.498$). (Table 7a, 7b).

Regarding serum glucose values, 56.3% of hospitalized patients had pathologic values, whereas 83.2% of non-hospitalized patients had normal values. The average value of glucose for hospitalized patients who recovered was 146.26 mg/dl, whereas the patients who died had average glucose levels of 161.70 mg/dl. Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of glucose. It was found that there is a statistically significant relationship in this comparison ($p<0.001$). (Tables 8a, 8b, and 40).

A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of amylase and albumin levels. It was found that there is no statistically significant relationship in this comparison ($p=0.121$ and $p=0.804$ respectively). (Tables 9a, 9b, 10a, 10b).

Regarding hemoglobin ($p=0.094$), hematocrit ($p=0.107$), MCV ($p=0.652$), MCH ($p=0.989$), and MCHC ($p=0.068$), Chi-Square statistical test found no statistically significant relationship in this comparison between hospitalized and non-hospitalized patients. (Tables 11a, 11b, 12a, 12b, 13a, 13b, 14a, 14b, 15a, 15b).

Hospitalized patients seemed to have abnormal platelet counts (either elevated or below normal values) in a percentage of 22.0%, whereas 65.8% of non-hospitalized patients had normal platelet count. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of the PLT. It was found that there is a statistically significant relationship in this comparison ($p=0.041$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (table 16a, 16b).

Regarding renal function: Urea values were higher in 69.8% of hospitalized patients. All hospitalized patients who recovered had an average urea value 50.48 mg/dl. Patents who died had average urea levels of 80.45 mg/dl. Non-hospitalized patients had average urea of 31.44 mg/dl. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of urea. It was found that there is a statistically significant relationship in this comparison ($p<0.001$). Specifically, the patients who were hospitalized had a higher percentage of

abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (tables 17a, 17b, and 40). Creatinine count was either elevated or below normal values in 86.7% of hospitalized patients. Patients who died had average creatinine of 1.42 mg/dl. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of creatinine. It was found that there is a statistically significant relationship in this comparison ($p<0.001$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (table 18a, 18b).

Regarding SGOT, 50.0% of hospitalized patients had abnormal values. Patients who died had an average value of 42.9 IU/L. Hospitalized patients who recovered had an average value of 34.61 IU/L, whereas non-hospitalized patients had an average value of 27.11 IU/L. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of SGOT. It was found that there is a statistically significant relationship in this comparison ($p=0.024$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (tables 19a, 19b, and 40).

A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of SGPT. It was found that there is no statistically significant relationship in this comparison ($p=0.625$). (Table 20a, 20b).

Regarding LDH, 50.3% of hospitalized patients had elevated values, whereas 82.7% of non-hospitalized patients had normal values. Average value for LDH for the patients who died was 380.90 U/L. Hospitalized patients who recovered had average value of 274.53 U/L, whereas non-hospitalized patients had average value of 201.83 U/L. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of LDH. It was found that there is a statistically significant relationship in this comparison ($p<0.001$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (tables 21a, 21b, and 40).

Regarding CK, 57.9% of hospitalized patients had abnormal values, whereas 64.3% of non-hospitalized patients had normal values. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of CK. It was found that there is marginally statistically significant relationship in this comparison ($p=0.053$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (table 22a, 22b).

Regarding CK-MB, Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of CK-MB. It was found that there is no statistically significant relationship in this comparison ($p=0.891$). (Table 23a, 23b).

Regarding GGT, 75% of hospitalized patients had pathologic values, whereas 66.0% of non-hospitalized patients had

normal values. Average value for patients who died was 54.35 IU/L, for the hospitalized patients who recovered was 47.1 IU/L and for non-hospitalized patients 30.51 IU/L. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of GGT. It was found that there is a statistically significant relationship in this comparison ($p<0.001$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (tables 24a, 24b, and 40).

CRP values were elevated in a rate of 57% of hospitalized patients. 91.9% of non-hospitalized patients had normal values. Patients who died had an average value of 13.97 mg/dl. Hospitalized patients who recovered had average values of 6.93 mg/dl, whereas non-hospitalized patients had average values of 2.15 mg/dl. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of CRP. It was found that there is a statistically significant relationship in this comparison ($p<0.001$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (table 25a, 25b, and 40).

A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of ALP. It was found that there is no statistically significant relationship in this comparison ($p=0.885$). (Table 26a, 26b).

A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of potassium. It was found that there is no statistically significant relationship in this comparison ($p=0.158$). (Table 27a, 27b).

Regarding sodium, 60.9% of hospitalized patients had abnormal values, whereas 69.3% of non-hospitalized patients had normal values. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of sodium. It was found that there is a statistically significant relationship in this comparison ($p<0.001$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (table 28a, 28b).

Regarding calcium, 68.0% of hospitalized patients had abnormal values, whereas 90.2% of non-hospitalized patients had normal values. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of calcium. It was found that there is a statistically significant relationship in this comparison ($p<0.001$). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (table 29a, 29b).

Regarding high sensitivity Troponin I, 70.5% of hospitalized patients had abnormal values, whereas 65.8% of non-hospitalized patients had normal values. Average value for patients who died was 92.04 pg/ml, for hospitalized patients who recovered 12.67 pg/ml, and for non-hospitalized patients 4.52 pg/ml. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of troponin. It

was found that there is a statistically significant relationship in this comparison (p<0.001). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (table 30a, 30b).

Regarding ferritin, 56.5% of hospitalized patients had abnormal values, whereas 74.3% of non-hospitalized patients had normal values. Average value for patients who died 739.07 ng/ml. Average value for hospitalized patients who recovered 505.99. Average value for non-hospitalized patients 258.29. A Chi-Square statistical test was performed to compare the hospitalized patients to non-hospitalized patients in relation to the normal or abnormal values of ferritin. It was found that there is a statistically significant relationship in this comparison (p<0.001). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized (table 31a, 31b).

4.2 Correlates of the hospitalized patients regarding their demographic features (where available) were seeked out:

a) Depending on age and the average days for recovery or death: 95 patients recovered with mean age 63.1 years (standard deviation 17.3) whereas, 29 patents died with mean age 78.8 years (standard deviation 9.07). There is a statistically significant difference in the mean age of those who recovered and those who ended up (p<0.001). (Table 32).

b) Regarding the gender of the hospitalized patients and the outcome, statistical analysis showed that there is no statistically significant relationship between recovery-death of the hospitalized patients and gender (p=0.256). (Table 33).

c) Correlates of age regarding days of hospitalisation were looked for and found not statistically significant (p=0.465). (Table 34).

d) Correlates of gender regarding days of hospitalisation were looked for and found there was no statistically significant difference (p=0.284). (Table 35).

e) Regarding age and days from hospitalisation to death for the hospitalized patients no statistically significant difference was found (p=0.154). (Table 36).

f) Regarding gender and days from hospitalisation to death for the hospitalized patients no statistically significant difference was found (p=0.091), (table 37). Mean days from hospitalisation to death for the male patients were 57.38. Mean days from hospitalisation to death for the female hospitalized patients were 24.27.

g) Regarding days of hospitalisation and days of hospitalisation till death for the hospitalized patients no statistically significant difference was found (p=0.749). (Table 38).

h) Days of hospitalisation and outcome. There was no statistically significant difference found between days of hospitalisation and outcome (p=0.145). (Table 39).

Table 1a. WBC Crosstabulation

			WBC Normal values	Pathological values	Total
	in hospitalisation	Count	81	21	102
		% within in hospitalisation	79.4%	20.6%	100.0%
		% within WBC	34.9%[a]	55.3%[b]	37.8%
		% of Total number of patients	30.0%	7.8%	37.8%
	non-hospitalisation	Count	151	17	168
		% within non-hospitalisation	89.9%	10.1%	100.0%
		% within WBC	65.1%[c]	44.7%[d]	62.2%
		% of Total	55.9%	6.3%	62.2%
Total		Count	232	38	270

a. % within WBC stands for the percentage of patients with normal WBC who were hospitalized
b. % within WBC stands for the percentage of patients with abnormal WBC who were hospitalized
c. % within WBC stands for the percentage of patients with normal WBC who were not hospitalized
d. % within WBC stands for the percentage of patients with abnormal WBC who were not hospitalized

Table 1b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the WBC. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.752[a]	1	**.016**		
Continuity Correction[b]	4.919	1	.027		
Likelihood Ratio	5.577	1	.018		
Fisher's Exact Test				.019	.014
Linear-by-Linear Association	5.731	1	.017		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.36.
b. Computed only for a 2x2 table

Table 2a. NEUT Crosstabulation

			NEUT Normal values	Pathological values	Total
	in hospitalisation	Count	56	46	102
		% within in hospitalisation	54.9%	45.1%	100.0%
		% within NEUT	**27.6%**[a]	**68.7%**[b]	37.8%
		% of Total	20.7%	17.0%	37.8%
	non-hospitalisation	Count	147	21	168
		% within non-hospitalisation	87.5%	12.5%	100.0%
		% within NEUT	**72.4%**[c]	**31.3%**[d]	62.2%
		% of Total	54.4%	7.8%	62.2%
Total		Count	203	67	270

a. % within NEUT stands for the percentage of patients with normal NEUT who were hospitalized
b. % within NEUT stands for the percentage of patients with abnormal NEUT who were hospitalized
c. % within NEUT stands for the percentage of patients with normal NEUT who were not hospitalized
d. % within NEUT stands for the percentage of patients with abnormal NEUT who were not hospitalized

Table 2b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the NEUT. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	36.148[a]	1	**.000**		
Continuity Correction[b]	34.422	1	.000		
Likelihood Ratio	35.543	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	36.014	1	.000		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 25.31.
b. Computed only for a 2x2 table

Table 3a. LYMPH Crosstabulation

			LYMPH Normal values	Pathological values	Total
	in hospitalisation	Count	33	69	102
		% within in hospitalisation	32.4%	67.6%	100.0%
		% within LYMPH	**24.3%[a]**	**51.5%[b]**	37.8%
		% of Total	12.2%	25.6%	37.8%
	non-hospitalisation	Count	103	65	168
		% within non-hospitalisation	61.3%	38.7%	100.0%
		% within LYMPH	**75.7%[c]**	**48.5%[d]**	62.2%
		% of Total	38.1%	24.1%	62.2%
Total		Count	136	134	270

a. % within LYMPH stands for the percentage of patients with normal LYMPH who were hospitalized
b. % within LYMPH stands for the percentage of patients with abnormal LYMPH who were hospitalized
c. % within LYMPH stands for the percentage of patients with normal LYMPH who were not hospitalized
d. % within LYMPH stands for the percentage of patients with abnormal LYMPH who were not hospitalized

Table 3b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the LYMPH. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	21.287[a]	1	**.000**		
Continuity Correction[b]	20.145	1	.000		
Likelihood Ratio	21.639	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	21.209	1	.000		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 50.62.
b. Computed only for a 2x2 table

Table 4a. MONO Crosstabulation

			MONO Normal values	Pathological values	Total
	in hospitalisation	Count	26	76	102
		% within in hospitalisation	25.5%	74.5%	100.0%
		% within MONO	44.8%[a]	35.8%[b]	37.8%
		% of Total	9.6%	28.1%	37.8%
	non-hospitalisation	Count	32	136	168
		% within non-hospitalisation	19.0%	81.0%	100.0%
		% within MONO	55.2%[c]	64.2%[d]	62.2%
		% of Total	11.9%	50.4%	62.2%
Total		Count	58	212	270

a. % within MONO stands for the percentage of patients with normal MONO who were hospitalized
b. % within MONO stands for the percentage of patients with abnormal MONO who were hospitalized
c. % within MONO stands for the percentage of patients with normal MONO who were not hospitalized
d. % within MONO stands for the percentage of patients with abnormal MONO who were not hospitalized

Table 4b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the MONO. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.562[a]	1	.211		
Continuity Correction[b]	1.203	1	.273		
Likelihood Ratio	1.539	1	.215		
Fisher's Exact Test				.224	.137
Linear-by-Linear Association	1.556	1	.212		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 21.91.
b. Computed only for a 2x2 table

Table 5a. EOS Crosstabulation

			EOS Normal values	Pathological values	Total
	in hospitalisation	Count	100	2	102
		% within in hospitalisation	98.0%	2.0%	100.0%
		% within EOS	37.9%[a]	33.3%[b]	37.8%
		% of Total	37.0%	0.7%	37.8%
	non-hospitalisation	Count	164	4	168
		% within non-hospitalisation	97.6%	2.4%	100.0%
		% within EOS	62.1%[c]	66.7%[d]	62.2%
		% of Total	60.7%	1.5%	62.2%
Total		Count	264	6	270

a. % within EOS stands for the percentage of patients with normal EOS who were hospitalized
b. % within EOS stands for the percentage of patients with abnormal EOS who were hospitalized
c. % within EOS stands for the percentage of patients with normal EOS who were not hospitalized
d. % within EOS stands for the percentage of patients with abnormal EOS who were not hospitalized

Table 5b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the EOS. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.052[a]	1	.820		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.052	1	.819		
Fisher's Exact Test				1.000	.591
Linear-by-Linear Association	.051	1	.821		
N of Valid Cases	270				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.27.
b. Computed only for a 2x2 table

Table 6a. BASO Crosstabulation

			BASO Normal values	Pathological values	Total
	in hospitalisation	Count	101	1	102
		% within in hospitalisation	99.0%	1.0%	100.0%
		% within BASO	38.1%[a]	20.0%[b]	37.8%
		% of Total	37.4%	0.4%	37.8%
	non-hospitalisation	Count	164	4	168
		% within non-hospitalisation	97.6%	2.4%	100.0%
		% within BASO	61.9%[c]	80.0%[d]	62.2%
		% of Total	60.7%	1.5%	62.2%
Total		Count	265	5	270

a. % within BASO stands for the percentage of patients with normal BASO who were hospitalized
b. % within BASO stands for the percentage of patients with abnormal BASO who were hospitalized
c. % within BASO stands for the percentage of patients with normal BASO who were not hospitalized
d. % within BASO stands for the percentage of patients with abnormal BASO who were not hospitalized

Table 6b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the BASO. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.685[a]	1	.408		
Continuity Correction[b]	.131	1	.717		
Likelihood Ratio	.751	1	.386		
Fisher's Exact Test				.653	.375
Linear-by-Linear Association	.682	1	.409		
N of Valid Cases	270				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.89.
b. Computed only for a 2x2 table

Table 7a. RBC Crosstabulation

			RBC Normal values	Pathological values	Total
	in hospitalisation	Count	62	40	102
		% within in hospitalisation	60.8%	39.2%	100.0%
		% within RBC	36.3%[a]	40.4%[b]	37.8%
		% of Total	23.0%	14.8%	37.8%
	Non-hospitalisation	Count	109	59	168
		% within non-hospitalisation	64.9%	35.1%	100.0%
		% within RBC	63.7%[c]	59.6%[d]	62.2%
		% of Total	40.4%	21.9%	62.2%
Total		Count	171	99	270

a. % within RBC stands for the percentage of patients with normal RBC who were hospitalized
b. % within RBC stands for the percentage of patients with abnormal RBC who were hospitalized
c. % within RBC stands for the percentage of patients with normal RBC who were not hospitalized
d. % within RBC stands for the percentage of patients with abnormal RBC who were not hospitalized

Table 7b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the RBC. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.459[a]	1	.498		
Continuity Correction[b]	.299	1	.584		
Likelihood Ratio	.457	1	.499		
Fisher's Exact Test				.517	.292
Linear-by-Linear Association	.457	1	.499		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 37.40.
b. Computed only for a 2x2 table

Table 8a. glucose Crosstabulation

			glucose Normal values	Pathological values	Total
	in hospitalisation	Count	21	76	97
		% within in hospitalisation	21.6%	78.4%	100.0%
		% within glucose	**16.8%**[a]	**56.3%**[b]	37.3%
		% of Total	8.1%	29.2%	37.3%
	non-hospitalisation	Count	104	59	163
		% within non-hospitalisation	63.8%	36.2%	100.0%
		% within glucose	**83.2%**[c]	**43.7%**[d]	62.7%
		% of Total	40.0%	22.7%	62.7%
Total		Count	125	135	260

a. % within glucose stands for the percentage of patients with normal glucose who were hospitalized
b. % within glucose stands for the percentage of patients with abnormal glucose who were hospitalized
c. % within glucose stands for the percentage of patients with normal glucose who were not hospitalized
d. % within glucose stands for the percentage of patients with abnormal glucose who were not hospitalized

Table 8b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the glucose. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	43.288[a]	1	**.000**		
Continuity Correction[b]	41.616	1	.000		
Likelihood Ratio	45.319	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	43.122	1	.000		
N of Valid Cases	260				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 46.63.
b. Computed only for a 2x2 table

Table 9a. AMYLASE Crosstabulation

			AMYLASE		
			Normal values	Pathological values	Total
	in hospitalisation	Count	86	7	93
		% within in hospitalisation	92.5%	7.5%	100.0%
		% within AMYLASE	36.1%[a]	58.3%[b]	37.2%
		% of Total	34.4%	2.8%	37.2%
	non-hospitalisation	Count	152	5	157
		% within non-hospitalisation	96.8%	3.2%	100.0%
		% within AMYLASE	63.9%[c]	41.7%[d]	62.8%
		% of Total	60.8%	2.0%	62.8%
Total		Count	238	12	250

a. % within AMYLASE stands for the percentage of patients with normal AMYLASE who were hospitalized
b. % within AMYLASE stands for the percentage of patients with abnormal AMYLASE who were hospitalized
c. % within AMYLASE stands for the percentage of patients with normal AMYLASE who were not hospitalized
d. % within AMYLASE stands for the percentage of patients with abnormal AMYLASE who were not hospitalized

Table 9b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the AMYLASE. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.410[a]	1	.121		
Continuity Correction[b]	1.553	1	.213		
Likelihood Ratio	2.312	1	.128		
Fisher's Exact Test				.135	.108
Linear-by-Linear Association	2.400	1	.121		
N of Valid Cases	250				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.46.
b. Computed only for a 2x2 table

Table 10a. albumin Crosstabulation

			albumin Normal values	Pathological values	Total
	in hospitalisation	Count	95	2	97
		% within in hospitalisation	97.9%	2.1%	100.0%
		% within albumin	38.3%[a]	33.3%[b]	38.2%
		% of Total	37.4%	0.8%	38.2%
	non- hospitalisation	Count	153	4	157
		% within non-hospitalisation	97.5%	2.5%	100.0%
		% within albumin	61.7%[c]	66.7%[d]	61.8%
		% of Total	60.2%	1.6%	61.8%
Total		Count	248	6	254

a. % within albumin stands for the percentage of patients with normal albumin who were hospitalized
b. % within albumin stands for the percentage of patients with abnormal albumin who were hospitalized
c. % within albumin stands for the percentage of patients with normal albumin who were not hospitalized
d. % within albumin stands for the percentage of patients with abnormal albumin who were not hospitalized

Table 10b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the albumin. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.061[a]	1	.804		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.062	1	.803		
Fisher's Exact Test				1.000	.582
Linear-by-Linear Association	.061	1	.805		
N of Valid Cases	254				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.29.
b. Computed only for a 2x2 table

Table 11a. HGB Crosstabulation

			HGB Normal values	Pathological values	Total
	in hospitalisation	Count	62	40	102
		% within in hospitalisation	60.8%	39.2%	100.0%
		% within HGB	34.4%[a]	44.9%[b]	37.9%
		% of Total	23.0%	14.9%	37.9%
	non-hospitalisation	Count	118	49	167
		% within non-hospitalisation	70.7%	29.3%	100.0%
		% within HGB	65.6%[c]	55.1%[d]	62.1%
		% of Total	43.9%	18.2%	62.1%
Total		Count	180	89	269

a. % within HGB stands for the percentage of patients with normal HGB who were hospitalized
b. % within HGB stands for the percentage of patients with abnormal HGB who were hospitalized
c. % within HGB stands for the percentage of patients with normal HGB who were not hospitalized
d. % within HGB stands for the percentage of patients with abnormal HGB who were not hospitalized

Table 11b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the HGB. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.789[a]	1	.095		
Continuity Correction[b]	2.361	1	.124		
Likelihood Ratio	2.764	1	.096		
Fisher's Exact Test				.109	.063
Linear-by-Linear Association	2.778	1	.096		
N of Valid Cases	269				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 33.75.
b. Computed only for a 2x2 table

Table 12a. HCT Crosstabulation

			HCT Normal values	Pathological values	Total
	in hospitalisation	Count	48	54	102
		% within in hospitalisation	47.1%	52.9%	100.0%
		% within HCT	33.3%[a]	42.9%[b]	37.8%
		% of Total	17.8%	20.0%	37.8%
	Non-hospitalisation	Count	96	72	168
		% within non-hospitalisation	57.1%	42.9%	100.0%
		% within HCT	66.7%[c]	57.1%[d]	62.2%
		% of Total	35.6%	26.7%	62.2%
Total		Count	144	126	270

a. % within HCT stands for the percentage of patients with normal HCT who were hospitalized
b. % within HCT stands for the percentage of patients with abnormal HCT who were hospitalized
c. % within HCT stands for the percentage of patients with normal HCT who were not hospitalized
d. % within HCT stands for the percentage of patients with abnormal HCT who were not hospitalized

Table 12b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the HCT. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.593[a]	1	.107		
Continuity Correction[b]	2.204	1	.138		
Likelihood Ratio	2.593	1	.107		
Fisher's Exact Test				.131	.069
Linear-by-Linear Association	2.583	1	.108		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 47.60.
b. Computed only for a 2x2 table

Table 13a. MCV Crosstabulation

			MCV Normal values	Pathological values	Total
	in hospitalisation	Count	79	23	102
		% within in hospitalisation	77.5%	22.5%	100.0%
		% within MCV	37.1%[a]	40.4%[b]	37.8%
		% of Total	29.3%	8.5%	37.8%
	non-hospitalisation	Count	134	34	168
		% within non-hospitalisation	79.8%	20.2%	100.0%
		% within MCV	62.9%[c]	59.6%[d]	62.2%
		% of Total	49.6%	12.6%	62.2%
Total		Count	213	57	270

a. % within MCV stands for the percentage of patients with normal MCV who were hospitalized
b. % within MCV stands for the percentage of patients with abnormal MCV who were hospitalized
c. % within MCV stands for the percentage of patients with normal MCV who were not hospitalized
d. % within MCV stands for the percentage of patients with abnormal MCV who were not hospitalized

Table 13b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the MCV. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.204[a]	1	.652		
Continuity Correction[b]	.088	1	.766		
Likelihood Ratio	.202	1	.653		
Fisher's Exact Test				.648	.381
Linear-by-Linear Association	.203	1	.653		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 21.53.
b. Computed only for a 2x2 table

Table 14a. MCH Crosstabulation

			MCH Normal values	Pathological values	Total
	in hospitalisation	Count	79	23	102
		% within in hospitalisation	77.5%	22.5%	100.0%
		% within MCH	37.8%[a]	37.7%[b]	37.8%
		% of Total	29.3%	8.5%	37.8%
	non-hospitalisation	Count	130	38	168
		% within non-hospitalisation	77.4%	22.6%	100.0%
		% within MCH	62.2%[c]	62.3%[d]	62.2%
		% of Total	48.1%	14.1%	62.2%
Total		Count	209	61	270

a. % within MCH stands for the percentage of patients with normal MCH who were hospitalized
b. % within MCH stands for the percentage of patients with abnormal MCH who were hospitalized
c. % within MCH stands for the percentage of patients with normal MCH who were not hospitalized
d. % within MCH stands for the percentage of patients with abnormal MCH who were not hospitalized

Table 14b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the MCH. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.000[a]	1	.989		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.000	1	.989		
Fisher's Exact Test				1.000	.557
Linear-by-Linear Association	.000	1	.989		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 23.04.
b. Computed only for a 2x2 table

Table 15a. MCHC Crosstabulation

		MCHC	Total

			Normal values	Pathological values	
	in hospitalisation	Count	100	2	102
		% within in hospitalisation	98.0%	2.0%	100.0%
		% within MCHC	37.3%[a]	100.0%[b]	37.8%
		% of Total	37.0%	0.7%	37.8%
	Non-hospitalisation	Count	168	0	168
		% within non-hospitalisation	100.0%	0.0%	100.0%
		% within MCHC	62.7%[c]	0.0%[d]	62.2%
		% of Total	62.2%	0.0%	62.2%
Total		Count	268	2	270

a. % within MCHC stands for the percentage of patients with normal MCHC who were hospitalized
b. % within MCHC stands for the percentage of patients with abnormal MCHC who were hospitalized
c. % within MCHC stands for the percentage of patients with normal MCHC who were not hospitalized
d. % within MCHC stands for the percentage of patients with abnormal MCHC who were not hospitalized

Table 15b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the MCHC. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.319[a]	1	.068		
Continuity Correction[b]	1.188	1	.276		
Likelihood Ratio	3.918	1	.048		
Fisher's Exact Test				.142	.142
Linear-by-Linear Association	3.306	1	.069		
N of Valid Cases	270				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 76.
b. Computed only for a 2x2 table

Table 16a. PLT Crosstabulation

			PLT Normal range	Pathological values	Total
	in hospitalisation	Count	68	34	102

		% within in hospitalisation	66.7%	**33.3%**	100.0%
		% within PLT	**34.2%**[a]	47.9%[b]	37.8%
		% of Total	25.2%	12.6%	37.8%
	non-hospitalisation	Count	131	37	168
		% within non-hospitalisation	78.0%	**22.0%**	100.0%
		% within PLT	**65.8%**[c]	52.1%[d]	62.2%
		% of Total	48.5%	13.7%	62.2%
Total		Count	199	71	270

a. % within PLT stands for the percentage of patients with normal PLT who were hospitalized
b. % within PLT stands for the percentage of patients with abnormal PLT who were hospitalized
c. % within PLT stands for the percentage of patients with normal PLT who were not hospitalized
d. % within PLT stands for the percentage of patients with abnormal PLT who were not hospitalized

Table 16b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the PLT. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.188[a]	1	**.041**		
Continuity Correction[b]	3.625	1	.057		
Likelihood Ratio	4.121	1	.042		
Fisher's Exact Test				.046	.029
Linear-by-Linear Association	4.173	1	.041		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 26.82.
b. Computed only for a 2x2 table

Table 17a. urea Crosstabulation

			urea Normal values	Pathological values	Total
	in hospitalisation	Count	72	30	102
		% within in hospitalisation	70.6%	29.4%	100.0%
		% within urea	**31.7%**[a]	**69.8%**[b]	37.8%
		% of Total	26.7%	11.1%	37.8%

	non-hospitalisation	Count	155	13	168
		% within non-hospitalisation	92.3%	7.7%	100.0%
		% within urea	68.3%[c]	30.2%[d]	62.2%
		% of Total	**57.4%**	**4.8%**	62.2%
Total		Count	227	43	270

a. % within urea stands for the percentage of patients with normal urea who were hospitalized
b. % within urea stands for the percentage of patients with abnormal urea who were hospitalized
c. % within urea stands for the percentage of patients with normal urea who were not hospitalized
d. % within urea stands for the percentage of patients with abnormal urea who were not hospitalized

Table 17b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the UREA. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	22.266[a]	1	**.000**		
Continuity Correction[b]	20.677	1	.000		
Likelihood Ratio	21.673	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	22.184	1	.000		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 16.24.
b. Computed only for a 2x2 table

Table 18a. creatinine Crosstabulation

			creatinine Normal range	Pathological values	Total
	in hospitalisation	Count	89	13	102
		% within in hospitalisation	87.3%	12.7%	100.0%
		% within creatinine	34.9%[a]	86.7%[b]	37.8%
		% of Total	33.0%	4.8%	37.8%
	non-hospitalisation	Count	166	2	168
		% within non-hospitalisation	98.8%	1.2%	100.0%

	% within creatinine	65.1%[c]	13.3%[d]	62.2%
	% of Total	61.5%	0.7%	62.2%
Total	Count	255	15	270

a. % within creatinine stands for the percentage of patients with normal creatinine who were hospitalized
b. % within creatinine stands for the percentage of patients with abnormal creatinine who were hospitalized
c. % within creatinine stands for the percentage of patients with normal creatinine who were not hospitalized
d. % within creatinine stands for the percentage of patients with abnormal creatinine who were not hospitalized

Table 18b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the creatinine. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	16.149[a]	1	**.000**		
Continuity Correction[b]	14.022	1	.000		
Likelihood Ratio	16.334	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	16.089	1	.000		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.67.
b. Computed only for a 2x2 table

Table 19a. SGOT Crosstabulation

			SGOT Normal range	Pathological values	Total
	in hospitalisation	Count	71	29	100
		% within in hospitalisation	71.0%	29.0%	100.0%
		% within SGOT	33.8%[a]	50.0%[b]	37.3%
		% of Total	26.5%	10.8%	37.3%
	non-hospitalisation	Count	139	29	168
		% within non-hospitalisation	82.7%	17.3%	100.0%
		% within SGOT	66.2%[c]	50.0%[d]	62.7%

	% of Total	51.9%	10.8%	62.7%
Total	Count	210	58	268

a. % within SGOT stands for the percentage of patients with normal SGOT who were hospitalized
b. % within SGOT stands for the percentage of patients with abnormal SGOT who were hospitalized
c. % within SGOT stands for the percentage of patients with normal SGOT who were not hospitalized
d. % within SGOT stands for the percentage of patients with abnormal SGOT who were not hospitalized

Table 19b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the SGOT. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.093[a]	1	**.024**		
Continuity Correction[b]	4.425	1	.035		
Likelihood Ratio	4.977	1	.026		
Fisher's Exact Test				.031	.019
Linear-by-Linear Association	5.074	1	.024		
N of Valid Cases	268				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 21.64.
b. Computed only for a 2x2 table

Table 20a. SGPT Crosstabulation

			SGPT Normal range	Pathological values	Total
	in hospitalisation	Count	89	13	102
		% within in hospitalisation	87.3%	12.7%	100.0%
		% within SGPT	38.4%[a]	34.2%[b]	37.8%
		% of Total	33.0%	4.8%	37.8%
	non-hospitalisation	Count	143	25	168
		% within non-hospitalisation	85.1%	14.9%	100.0%
		% within SGPT	61.6%[c]	65.8%[d]	62.2%
		% of Total	53.0%	9.3%	62.2%
Total		Count	232	38	270

a. % within SGPT stands for the percentage of patients with normal SGPT who were hospitalized
b. % within SGPT stands for the percentage of patients with abnormal SGPT who were hospitalized
c. % within SGPT stands for the percentage of patients with normal SGPT who were not hospitalized
d. % within SGPT stands for the percentage of patients with abnormal SGPT who were not hospitalized

Table 20b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the SGPT. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.239[a]	1	.625		
Continuity Correction[b]	.095	1	.757		
Likelihood Ratio	.242	1	.623		
Fisher's Exact Test				.719	.383
Linear-by-Linear Association	.239	1	.625		
N of Valid Cases	270				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 14.36.
b. Computed only for a 2x2 table

Table 21a. LDH Crosstabulation

			LDH Normal values	Pathological values	Total
	in hospitalisation	Count	18	78	96
		% within in hospitalisation	18.8%	81.3%	100.0%
		% within LDH	**17.3%[a]**	**50.3%[b]**	37.1%
		% of Total	6.9%	30.1%	37.1%
	non-hospitalisation	Count	86	77	163
		% within non-hospitalisation	52.8%	47.2%	100.0%
		% within LDH	**82.7%[c]**	**49.7%[d]**	62.9%
		% of Total	33.2%	29.7%	62.9%
Total		Count	104	155	259

a. % within LDH stands for the percentage of patients with normal LDH who were hospitalized
b. % within LDH stands for the percentage of patients with abnormal LDH who were hospitalized
c. % within LDH stands for the percentage of patients with normal LDH who were not hospitalized
d. % within LDH stands for the percentage of patients with abnormal LDH who were not hospitalized

Table 21b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the LDH. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	29.082[a]	1	**.000**		
Continuity Correction[b]	27.684	1	.000		
Likelihood Ratio	30.818	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	28.970	1	.000		
N of Valid Cases	259				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 38.55.
b. Computed only for a 2x2 table

Table 22a. CK Crosstabulation

			CK Normal values	Pathological values	Total
	in hospitalisation	Count	87	11	98
		% within in hospitalisation	88.8%	11.2%	100.0%
		% within CK	**35.7%[a]**	**57.9%[b]**	37.3%
		% of Total	33.1%	4.2%	37.3%
	non- hospitalisation	Count	157	8	165
		% within non-hospitalisation	95.2%	4.8%	100.0%
		% within CK	**64.3%[c]**	**42.1%[d]**	62.7%
		% of Total	59.7%	3.0%	62.7%
Total		Count	244	19	263

a. % within CK stands for the percentage of patients with normal CK who were hospitalized
b. % within CK stands for the percentage of patients with abnormal CK who were hospitalized
c. % within CK stands for the percentage of patients with normal CK who were not hospitalized
d. % within CK stands for the percentage of patients with abnormal CK who were not hospitalized

Table 22b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the CK. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.729[a]	1	**.053**		
Continuity Correction[b]	2.839	1	.092		
Likelihood Ratio	3.585	1	.058		
Fisher's Exact Test				.082	.048
Linear-by-Linear Association	3.715	1	.054		
N of Valid Cases	263				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.08.
b. Computed only for a 2x2 table

Table 23a. CK-MB Crosstabulation

			CK-MB Normal range	Pathological values	Total
	in hospitalisation	Count	78	10	88
		% within hospitalisation	88.6%	11.4%	100.0%
		% within CK-MB	35.8%[a]	34.5%[b]	35.6%
		% of Total	31.6%	4.0%	35.6%
	non-hospitalisation	Count	140	19	159
		% within non-hospitalisation	88.1%	11.9%	100.0%
		% within CK-MB	64.2%[c]	65.5%[d]	64.4%
		% of Total	56.7%	7.7%	64.4%
Total		Count	218	29	247

a. % within CK-MB stands for the percentage of patients with normal CK-MB who were hospitalized
b. % within CK-MB stands for the percentage of patients with abnormal CK-MB who were hospitalized
c. % within CK-MB stands for the percentage of patients with normal CK-MB who were not hospitalized
d. % within CK-MB stands for the percentage of patients with abnormal CK-MB who were not hospitalized

Table 23b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the CK-MB. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.019[a]	1	.891		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.019	1	.891		
Fisher's Exact Test				1.000	.534
Linear-by-Linear Association	.019	1	.891		
N of Valid Cases	247				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.33.
b. Computed only for a 2x2 table

Table 24a. GGT Crosstabulation

			GGT Normal range	Pathological values	Total
	in hospitalisation	Count	83	18	101
		% within in hospitalisation	82.2%	17.8%	100.0%
		% withinGGT	**34.0%[a]**	**75.0%[b]**	37.7%
		% of Total	31.0%	6.7%	37.7%
	non- hospitalisation	Count	161	6	167
		% within non-hospitalisation	96.4%	3.6%	100.0%
		% within GGT	**66.0%[c]**	**25.0%[d]**	62.3%
		% of Total	60.1%	2.2%	62.3%
Total		Count	244	24	268

a. % within GGT stands for the percentage of patients with normal GGT who were hospitalized
b. % within GGT stands for the percentage of patients with abnormal GGT who were hospitalized
c. % within GGT stands for the percentage of patients with normal GGT who were not hospitalized
d. % within GGT stands for the percentage of patients with abnormal GGT who were not hospitalized

Table 24b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the GGT. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	15.629[a]	1	**.000**		
Continuity Correction[b]	13.932	1	.000		
Likelihood Ratio	15.234	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	15.570	1	.000		
N of Valid Cases	268				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.04.
b. Computed only for a 2x2 table

Table 25a. CRP Crosstabulation

			RCRP Normal values	Pathological values	Total
	In hospitalisation	Count	8	94	102
		% within in hospitalisation	7.8%	92.2%	100.0%
		% within CRP	**8.1%[a]**	**57.0%[b]**	38.6%
		% of Total	3.0%	35.6%	38.6%
	non-hospitalisation	Count	91	71	162
		% within non-hospitalisation	56.2%	43.8%	100.0%
		% within CRP	**91.9%[c]**	**43.0%[d]**	61.4%
		% of Total	34.5%	26.9%	61.4%
Total		Count	99	165	264

a. % within CRP stands for the percentage of patients with normal CRP who were hospitalized
b. % within CRP stands for the percentage of patients with abnormal CRP who were hospitalized
c. % within CRP stands for the percentage of patients with normal CRP who were not hospitalized
d. % within CRP stands for the percentage of patients with abnormal CRP who were not hospitalized

Table 25b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the CRP. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	62.378[a]	1	**.000**		
Continuity Correction[b]	60.333	1	.000		
Likelihood Ratio	71.117	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	62.141	1	.000		
N of Valid Cases	264				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 38.25.
b. Computed only for a 2x2 table

Table 26a. ALP Crosstabulation

			ALP Normal range	Pathological values	Total
	in hospitalisation	Count	98	1	99
		% within in hospitalisation	99.0%	1.0%	100.0%
		% within ALP	37.4%[a]	33.3%[b]	37.4%
		% of Total	37.0%	0.4%	37.4%
	non-hospitalisation	Count	164	2	166
		% within non-hospitalisation	98.8%	1.2%	100.0%
		% within ALP	62.6%[c]	66.7%[d]	62.6%
		% of Total	61.9%	0.8%	62.6%
Total		Count	262	3	265

a. % within ALP stands for the percentage of patients with normal ALP who were hospitalized
b. % within ALP stands for the percentage of patients with abnormal ALP who were hospitalized
c. % within ALP stands for the percentage of patients with normal ALP who were not hospitalized
d. % within ALP stands for the percentage of patients with abnormal ALP who were not hospitalized

Table 26b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the ALP. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.021[a]	1	.885		
Continuity Correction[b]	.000	1	1.000		
Likelihood Ratio	.021	1	.884		
Fisher's Exact Test				1.000	.686
Linear-by-Linear Association	.021	1	.885		
N of Valid Cases	265				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.12.
b. Computed only for a 2x2 table

Table 27a. potassium Crosstabulation

			potassium Normal values	Pathological values	Total
	in hospitalisation	Count	83	16	99
		% within in hospitalisation	83.8%	16.2%	100.0%
		% within potassium	35.8%[a]	48.5%[b]	37.4%
		% of Total	31.3%	6.0%	37.4%
	non-hospitalisation	Count	149	17	166
		% within non-hospitalisation	89.8%	10.2%	100.0%
		% within potassium	64.2%[c]	51.5%[d]	62.6%
		% of Total	56.2%	6.4%	62.6%
Total		Count	232	33	265

a. % within potassium stands for the percentage of patients with normal potassium who were hospitalized
b. % within potassium stands for the percentage of patients with abnormal potassium who were hospitalized
c. % within potassium stands for the percentage of patients with normal potassium who were not hospitalized
d. % within potassium stands for the percentage of patients with abnormal potassium who were not hospitalized

Table 27b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the potassium. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.994[a]	1	.158		
Continuity Correction[b]	1.488	1	.223		
Likelihood Ratio	1.943	1	.163		
Fisher's Exact Test				.180	.112
Linear-by-Linear Association	1.986	1	.159		
N of Valid Cases	265				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.33.
b. Computed only for a 2x2 table

Table 28a. sodium Crosstabulation

			sodium Normal values	Pathological values	Total
	non-hospitalisation	Count	63	39	102
		% within in hospitalisation	61.8%	38.2%	100.0%
		% within sodium	30.7%[a]	60.9%[b]	37.9%
		% of Total	23.4%	14.5%	37.9%
	non-hospitalisation	Count	142	25	167
		% within non-hospitalisation	85.0%	15.0%	100.0%
		% within sodium	69.3%[c]	39.1%[d]	62.1%
		% of Total	52.8%	9.3%	62.1%
Total		Count	205	64	269

a. % within sodium stands for the percentage of patients with normal sodium who were hospitalized
b. % within sodium stands for the percentage of patients with abnormal sodium who were hospitalized
c. % within sodium stands for the percentage of patients with normal sodium who were not hospitalized
d. % within sodium stands for the percentage of patients with abnormal sodium who were not hospitalized

Table 28b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the sodium. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	18.904[a]	1	**.000**		
Continuity Correction[b]	17.642	1	.000		
Likelihood Ratio	18.471	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	18.834	1	.000		
N of Valid Cases	269				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 24.27.
b. Computed only for a 2x2 table

Table 29a. calcium Crosstabulation

			calcium Normal values	Pathological values	Total
	in hospitalisation	Count	65	34	99
		% within in hospitalisation	65.7%	34.3%	100.0%
		% within calcium	30.5%[a]	68.0%[b]	37.6%
		% of Total	24.7%	12.9%	37.6%
	non hospitalisation	Count	148	16	164
		% within non-hospitalisation	90.2%	9.8%	100.0%
		% within calcium	69.5%[c]	32.0%[d]	62.4%
		% of Total	56.3%	6.1%	62.4%
Total		Count	213	50	263

a. % within calcium stands for the percentage of patients with normal calcium who were hospitalized
b. % within calcium stands for the percentage of patients with abnormal calcium who were hospitalized
c. % within calcium stands for the percentage of patients with normal calcium who were not hospitalized
d. % within calcium stands for the percentage of patients with abnormal calcium who were not hospitalized

Table 29b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the calcium. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	24.239[a]	1	**.000**		
Continuity Correction[b]	22.668	1	.000		
Likelihood Ratio	23.611	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	24.146	1	.000		
N of Valid Cases	263				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 18.82.
b. Computed only for a 2x2 table

Table 30a. Troponin Crosstabulation

			Troponin Normal range	Pathological values	Total
	in hospitalisation	Count	64	15	79
		% within in hospitalisation	81.0%	19.0%	100.0%
		% within Troponin	34.2%[a]	75.0%[b]	38.2%
		% of Total	30.9%	7.2%	38.2%
	non-hospitalisation	Count	123	5	128
		% within non-hospitalisation	96.1%	3.9%	100.0%
		% within Troponin	65.8%[c]	25.0%[d]	61.8%
		% of Total	59.4%	2.4%	61.8%
Total		Count	187	20	207

a. % within Troponin stands for the percentage of patients with normal Troponin who were hospitalized
b. % within Troponin stands for the percentage of patients with abnormal Troponin who were hospitalized
c. % within Troponin stands for the percentage of patients with normal Troponin who were not hospitalized
d. % within Troponin stands for the percentage of patients with abnormal Troponin who were not hospitalized

Table 30b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the troponin. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	12.729[a]	1	**.000**		
Continuity Correction[b]	11.060	1	.001		
Likelihood Ratio	12.459	1	.000		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	12.668	1	.000		
N of Valid Cases	207				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.63.
b. Computed only for a 2x2 table

Table 31a. ferritin Crosstabulation

			ferritin Normal range	Pathological values	Total
	in hospitalisation	Count	29	39	68
		% within in hospitalisation	42.6%	57.4%	100.0%
		% within ferritin	25.7%[a]	56.5%[b]	37.4%
		% of Total	15.9%	21.4%	37.4%
	non-hospitalisation	Count	84	30	114
		% within non-hospitalisation	73.7%	26.3%	100.0%
		% within ferritin	74.3%[c]	43.5%[d]	62.6%
		% of Total	46.2%	16.5%	62.6%
Total		Count	113	69	182

a. % within ferritin stands for the percentage of patients with normal ferritin who were hospitalized
b. % within ferritin stands for the percentage of patients with abnormal ferritin who were hospitalized
c. % within ferritin stands for the percentage of patients with normal ferritin who were not hospitalized
d. % within ferritin stands for the percentage of patients with abnormal ferritin who were not hospitalized

Table 31b. Comparison of the hospitalized or non-hospitalized patients in relation to the normal or abnormal values of the ferritin. Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	17.431[a]	1	**.000**		
Continuity Correction[b]	16.137	1	.000		
Likelihood Ratio	17.366	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	17.335	1	.000		
N of Valid Cases	182				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 25.78.
b. Computed only for a 2x2 table

Table 32. Independent Samples Test. Recovery or death in correlation with age

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
AGE	Equal variances assumed	14.439	.000	-4.671	122	**.000**	-15.62468	3.34475	-22.24595	-9.00341

	Equal variances not assumed			-6.392	90.998	**.000**	-15.62468	2.44459	-20.48057	-10.76880

Table 33. Chi-Square Tests. There is no statistically significant relationship between the outcome (recovery or death) and gender

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.291[a]	1	.256		
Continuity Correction[b]	.853	1	.356		
Likelihood Ratio	1.288	1	.256		
Fisher's Exact Test				.292	.178
Linear-by-Linear Association	1.281	1	.258		
N of Valid Cases	124				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 13.33.
b. Computed only for a 2x2 table

Table 34. Correlations: age and days of hospitalisation. There was no statistically significant difference

			AGE	Days of hospitalisation
Spearman's rho	AGE	Correlation Coefficient	1.000	.076
		Sig. (2-tailed)	.	.465
		N	124	95
	Days of hospitalisation	Correlation Coefficient	.076	1.000
		Sig. (2-tailed)	.465	.
		N	95	95

Table 35. Correlations: gender and days of hospitalisation. There was no statistically significant difference. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
								95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Days of hospitalisation	Equal variances assumed	1.161	.284	-1.004	93	.318	-1.30481	1.30008	-3.88652	1.27690
	Equal variances not assumed			-.987	81.931	.326	-1.30481	1.32180	-3.93432	1.32470

Table 36. Correlations: age and days from hospitalisation to death. There was no statistically significant difference.

		AGE	Days from hospitalisation to death
AGE	Pearson Correlation	1	-.277
	Sig. (2-tailed)		.154
	N	124	28
Days from hospitalisation to death	Pearson Correlation	-.277	1
	Sig. (2-tailed)	.154	
	N	28	28

Table 37. Correlations: gender and days from hospitalisation to death. There was no statistically significant difference. Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Days from hospitalisation to death	Equal variances assumed	10.046	.004	1.755	26	.091	33.11795	18.86541	-5.66046	71.89636
	Equal variances not assumed			1.654	14.346	.120	33.11795	20.01837	-9.72014	75.95604

Table 38. Correlations: days of hospitalisation and days of hospitalisation till death for the hospitalized patients. There was no statistically significant difference

		Days till death	Days of Hospitalisation
Days of hospitalisation till death	Pearson Correlation	1	.069
	Sig. (2-tailed)		.749
	N	28	24
Days of hospitalisation	Pearson Correlation	.069	1
	Sig. (2-tailed)	.749	
	N	24	95

Table 39. Correlations: days of hospitalisation and outcome. There was no statistically significant difference. Independent Samples Test

	Levene's Test for Equality of Variances	t-test for Equality of Means

		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Days of hospitalisation	Equal variances assumed	7.085	.009	-1.469	93	.145	-2.17899	1.48287	-5.12368	.76570
	Equal variances not assumed			-1.265	31.864	.215	-2.17899	1.72196	-5.68709	1.32911

Table 40. Average values for statistically significant measurements				
	HOSPITALIZED patients who recovered	NON-HOSPITALIZED patients	HOSPITALIZED patients who died	Hospitalized versus non-hospitalized patients
WBC (K/mm^3)	6.76	5.77	10.23	p<0.016
NEUT%	71.68	61.71	80.18	p<0.001
LYMPH%	21.19	25.28	11.45	p<0.001
PLT (K/mm^3)	200.36	207.20	232.45	p<0.041
glucose (mg/dl)	146.26	111.96	161.70	p<0.001
urea (mg/dl)	50.48	31.44	80.45	p<0.001
creatinine (mg/dl)	0.98	0.85	1.42	p<0.001
SGOT (IU/L)	34.61	27.11	42.9	p<0.024
LDH(U/L)	274.53	201.83	380.90	p<0.001
CK(IU/L)	202.95	128.95	127.8	p<0.053
GGT(IU/L)	47.1	30.51	54.35	p<0.001

RCRP (mg/dl)	6.93	2.15	13.97	p<0.001
sodium (mmol/l)	136.02	137.84	136.84	p<0.001
calcium (mg/dl)	8.75	9.24	8.63	p<0.001
high sensitivity Troponin I (pg/ml)	12.67	4.52	92.04	p<0.001
ferritin (ng/ml)	505.99	258.29	739.07	p<0.001

5. Discussion

Coronaviruses are enveloped positive-sense single-stranded large RNA viruses that infect both humans and animals. The name is attributed to the characteristic spike proteins of the virus sticking out like a crown (corona).[5, 6]

Of the known four main subgroups of coronaviruses family (alpha, beta, gamma and delta), SARS-CoV-2 belongs to beta subgroup.[6] The virus was firstly isolated and reported by genomic screening in December 2019 in the city of Wuhan in Hubei province, China, from patients with severe pneumonia related to the sea-food market of Huanan.[1]

Transmission is mainly airborne, via respiratory droplets. Orofecal transmission cannot be excluded as the virus has been also isolated in feces.[7]

COVID-19 disease is manifested with a plethora of symptoms such as fever, cough, shortness of breath, fatigue, pharyngalgia, myalgias, headache, diarrhea, loss of taste (ageusia), or odor (anosmia).[1] The disease varies from mild respiratory tract infection to severe pneumonia, acute respiratory distress syndrome (ARDS), and death.[7] Breathlessness usually appears till the seventh day from onset of symptoms. Acute respiratory distress (ARDS) appears within 8-12 from onset of symptoms and the need for admission in Intensive Care Unit (ICU) 10-12 days from onset of symptoms.[8, 9]

The virus, struggling to survive and adapt, is subject to mutations. Some of the variants that occur are characterized as of significant interest and concern.[10] Data in the present study were collected retrospectively and represent the patients who seeked medical assistance during the first semester of 2021, where the third wave of the disease in Greece was at large. Laboratory results of these patients included in this study represent the first values of the afore described blood and serum tests. No concomitant diseases of the patients were recorded, as the present study aimed to find correlations among initial laboratory tests and disease severity regardless of the patients' medical history.

Regarding WBC count and neutrophils percentage, studies with different methodologies appear in literature. A study between proved and suspected but proved negative patients for COVID-19, concluded that COVID-19 patients were more likely to have normal or decreased WBC and neutrophil counts than the control patients.[11]

Two main leading causes to death are respiratory failure from acute respiratory distress syndrome (ARDS) and secondary

haemophagocytic lymphohistiocytosis (sHLH).[12, 13] Hypercytokinaemia is the main feature of sHLH and leads to multiorgan failure.[12, 13] Cytokine storm and hyperinflammatory state has been has related to neutrophil count above 10000/mm^3. This also sets the alarm for bacterial superinfection.[12-15] Another study associates for the first time the WBC count on admission and death rate. The higher WBC count on admission is related with higher possibility of death.[16] In our study, there was detected statistically significant difference of initial WBC count related to whether the patient would end up hospitalized or not. All patients who died had average WBC count above 10000/mm^3. Regarding the percentage of neutrophils, 68.7% of hospitalized patients had abnormal values. The patients who died had an average percentage of neutrophils above 80,18%. Therefore, initial abnormal WBC count can give clues about the patient's outcome. Patients' values above 10000/mm^3 should ring an alarm.

SARS-CoV-2 affects T lymphocytes and as a result leads to immune system impairment.[6] T cells seem to have an ambiguous role in COVID-19 infection. In mice they seem to take part in both virus clearance and immunopathology.[17] In humans the disease severity has been correlated with the frequency of a subset of CD4+ T cells with T-helper orientation that secrete granulocyte–monocytes colony-stimulating factor (GM- CSF), interleukin 6 (IL-6) and interferon gamma (IFN-γ) in high levels. The cascade of inflammation (hyperinflammatory state) that follows is the result of the subsequent increased expression of IL-6 by monocytes.[18] Decrease count and percentage of lymphocytes have been reported in patients with severe cases than those with mild cases of COVID-19.[11] A systematic review and meta-analysis found that lymphopenia is a major factor for severe COVID-19 and is also a prognostic factor for poor outcome.[15, 19] The cutoff value for patient admittance in the ICU is < 0.6x10^9 /L lymphocytes.[15] Lymphocytes express the angiotensin-converting enzyme receptor-2 (ACER-2). As a result, the virus binds to lymphocytes and causes cell lysis. In addition, during the cytokine storm syndrome, the released inflammatory mediators cause lymphocyte apoptosis and atrophy of lymphoid tissue. The result is lymphocytopenia.[15] In our study, pathological rates of lymphocytes were observed in 51.5% of hospitalized patients. A statistically significant relationship comparing hospitalized patients to non-hospitalized patients was observed. All patients who died in our study had initial percentage of lymphocytes less than 20% (average 11.41%). Therefore, the authors of the present study believe that initial abnormal lymphocyte values can prejudge the patient's outcome, regardless of other underline conditions.

Monocyte count has been reported to be elevated in COVID-19 patents who suffer from hypertension.[15] Monocytes also seem to be increased in number in the bronchoalveolar fluid in severe COVID-19.[20, 21] In our study there was no statistically significant difference observed regarding monocyte percentage. Hypertension or other underlying conditions were not recorded. Initial measurement of monocyte percentage does not seem to reflect on patient outcome.

There are studies reporting that platelet count of COVID-19 group patients with severe pneumonia was significantly higher than patients with other causes of severe pneumonia. Other studies reported that elevated white blood cell count combined with decreased platelet and lymphocyte counts were markers of severe COVID-

19.[15, 22] At time of diagnosis, elevated platelet count is linked to worse prognosis.[23] Our study is in accordance with those reports. Hospitalized patients seemed to have abnormal platelet counts (either elevated or below normal values) in a percentage of 22.0%, whereas 65.8% of non-hospitalized patients had normal platelet count. It was found that there is a statistically significant relationship in the comparison of hospitalized to non-hospitalized patients. Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized. In this setting, seems that initial values of platelet count could be mains to prejudge patients' outcome.

Regarding hematocrit, hemoglobin, total RBC count, and MCHC there are studies that find no correlation between mild and severe disease.[15, 24] On the other hand, other studies correlate COVID-19 severity with hemoglobin level.[25, 26] There are many reasons for low hemoglobin rates in COVID-19 patients. Direct infection of precursor cells by the virus, inflammation of mature erythrocytes, and alterations in iron metabolism are some of them.[27] In addition, cytokine storm syndrome causes autoimmune hemolytic anemia.[27] The mechanism seems to be cross reaction between spike protein of SARSCoV-2 and the protein ankyrin-1 of erythrocytes that causes indirect injury via molecular mimicry. As a result, erythrocytes' biology is affected in COVID-19 patients.[28] Low mean corpuscular volume and mean corpuscular hemoglobin have been related to severe COVID-19 disease in other studies.[24] In our study, initial laboratory tests revealed no statistically significant difference observed regarding RBC count, hemoglobin, hematocrit, MCV, MCH, or MCHC. A possible explanation is that those parameters are affected as the disease marches.

Regarding renal function, there are studies that connect elevated serum creatinine to severe COVID-19.[22, 29] Patients who suffer from acute respiratory syndrome have acute kidney injury as frequent complication.[30] The mechanism is that the angiotensin-converting enzyme 2 receptor is expressed in epithelial cells of kidneys.[31] Even slight renal dysfunction at the early stage of hospital admission is related to poor prognosis.[30] In our study, urea values were higher in 69.8% of hospitalized patients. All hospitalized patients who recovered had an average urea value 50.48 mg/dl. Patents who died had average urea levels of 80.45 mg/dl. Non-hospitalized patients had average urea between normal range. There was observed statistically significant relationship between hospitalized patients and non-hospitalized patients in relation to the normal or abnormal values of urea. Creatinine levels were abnormal in 86.7% of hospitalized patients. Patients who died had average creatinine of 1.42 mg/dl. It was found that there is a statistically significant relationship, that is, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized. Estimation of renal function is considered to the authors of the present study of major importance in COVID-19 patients' outcome.

Regarding liver function and COVID-19, there is direct liver injury. Bile duct cells are a target of SARS-CoV-2 virus as they express the receptor of angiotensin-converting enzyme 2, the way of entry of the virus into the cells. As a result, bile duct cells are subject to injury both due to local and systemic inflammation. Liver synthetic function is impaired. Some

studies have reported elevated SGOT, SGPT, LDH, and decreased albumin levels in patients with severe COVID-19 to support liver impairment.[6, 11] The results of our study regarding SGOT and LDH are in accordance with these findings. Howbeit in our study no statistically significant difference occurred regarding SGPT. To our knowledge, no statistically significant difference has been reported in literature for COVID-19 and ALP.[6, 11] This is consistent with the results of our study. The role of albumin levels has been controversial as a predictor factor of the disease outcome. However, there seems to be a gradual decrease in serum albumin levels as the disease progresses to critical illness in hospitalized patients. This can be explained due to impairment in liver synthetic function.[6, 11, 32] In our study albumin levels were not statistically significant between hospitalized and non-hospitalized patients. This observation perhaps is due to the early collection of data regarding the hospitalized patients' course.

C-reactive protein is a well-known biochemical marker of acute inflammation that is produced primarily in the liver. It has been reported that levels of CRP are significantly higher in patients with severe CODID-19.[6, 15] C-reactive protein levels have been described as independent prognostic factor regarding patients' concomitant diseases and COVID-19 outcome. [15] These findings are in accordance with our results. In our study, CRP values were statistically significant elevated comparing hospitalized to non-hospitalized patients. As a result, we suggest that elevated CRP values in initial laboratory finding can be used as a predictor to patients' outcome.

There are studies that report that elevated CK was associated with increased mortality and severity in patients with COVID-19, a result that is not affected by age, gender, hypertension, and diabetes.[33-34] Myalgias is a common initial symptom of patients.[33] Correlates of skeletal muscle pain and serum CK levels in literature are controversial. There are studies that support that muscle pain and CK levels above >200 U/L are related to severe cases.[33] In other studies on the other hand, higher prevalence of myalgias isrelated to milder cases.[33] In our study, it was found that there is marginally statistically significant relationship in this comparison (p=0.053). Specifically, the patients who were hospitalized had a higher percentage of abnormal values and a correspondingly lower percentage of normal values than those who were non-hospitalized. In the light of this finding, we suggest that elevated CK levels should be taken under consideration regarding the patients' outcome.

COVID-19 causes myocardial injury and as a result, troponin-I elevation is significantly associated with fatal patient outcome. Myocarditis is the direct effect of cardiac injury. The mechanism of injury is direct damage to heart pericytes that highly express ACE2. Myocardial injury is also deteriorated by microangiopathy, and thrombotic coagulopathy caused by the disease.[35] Normal troponin-I levels in the first 24 hours of admission have been connected to favorable survival at the time of discharge.[35] In our study, 70.5% of hospitalized patients had abnormal values and all patients who died had elevated values. Judging by the results of our study, measurement of high sensitivity Troponin I in the Emergency Department in all suspected or confirmed COVID-19 patients may help predict myocardial participation and patients' outcome.

Elevated values of ferritin in COVID-19 patients reveals constant macrophage activation and is a marker of disease

activity and patient outcome.[36, 37] High ferritin values are related to the so called secondary haemophagocytic lymphohistiocytosis (sHLH), the second cause of death after ARDS in patients with severe COVID-19.[36] This seems to be related to the ability of the virus to bind Toll Like Receptors and to activate inflammasome through IL-1β, but the mechanism needs further elucidation.[36] In our study, 56.5% of hospitalized patients had elevated ferritin values, whereas 74.3% of non-hospitalized patients had normal values. Ferritin average values (739.07 ng/ml) were extremely high in patients who died. Our data are consistent with the afore mentioned studies. Therefore, elevated ferritin levels at the time the patient seeks medical assistance for the first time of onset of symptoms is a reliable marker of the disease severity and outcome.

Significant changes in plasma osmolality are safeguarded by water and sodium balance.[38] Half of COVID-19 hospitalized patients suffer from hyponatremia.[38] Serum sodium concentration and IL-6 levels in severe disease are inversely correlated.[38] As a result, hyponatremia in hospitalized patients with COVID-19 has been associated with a higher risk of severe illness, length of hospitalisation, and mortality.[38] In the present study 60.9% of hospitalized patients had abnormal sodium values, whereas 69.3% of non-hospitalized patients had normal values. Statistically significant deference in sodium levels was observed between hospitalized and non-hospitalized patients. Sodium abnormal values at an early stage seems to be a useful and safe prognostic tool to disease severity.

Calcium is known to directly interact with the fusion peptides of enveloped viruses like SARS-CoV-2 and promotes virus replication.[39] Serum calcium levels has been described of major importance biomarker for disease severity from onset of symptoms.[39, 40] Anomalies in serum calcium levels has been referred to be closely related to multiple organ injuries and augmentation of inflammatory cytokines as the disease progresses.[40] In our study, 68% of patients with abnormal calcium were hospitalized, whereas 69% of non-hospitalized patients had normal calcium values. There was statistically significant difference between the two patient groups. Our data are consistent with the above-mentioned studies. Therefore, abnormal calcium levels as initial laboratory finding should be considered important prognostic factor of disease severity.

SARS-CoV-2 has been described in literature to cause hypokalemia via two major mechanisms. The first mechanism concerns the renin-angiotensin-aldosterone system axis. Seems that the virus through the angiotensin-converting enzyme 2 accelerates the activity of the axis, leading to overproduction of aldosterone and thus hypokalemia. The second mechanism involves furin, which has a key role in cleaving SARS-CoV-2 spike protein. The virus binds furin. As a result, epithelial sodium channels -which have principal role in regulating the volume of airway surface liquids- downregulate their activity. As a result, potassium ions are withheld, and hypokalemia is observed.[41-42] In our study it was found that there is no statistically significant relationship in initial potassium levels comparing hospitalized to non-hospitalized patients. Perhaps hypokalemia is observed later as the disease marches.

Regarding possible correlates between demographic features and days for recovery or hospitalisation our study produced the following data: No statistically significant relationship between recovery-death of the hospitalized

patients and gender were found. Age and gender regarding days of hospitalisation were not statistically significant. Age and gender regarding days of hospitalisation to death for the hospitalized patients was not statistically significant. Regarding days of hospitalisation and days of hospitalisation till death for the hospitalized patients no statistically significant difference was found. There was no statistically significant difference found between days of hospitalisation and outcome. According to Centers for Disease Control and Prevention, 74.3 % of patients who died from COVID-19 were over 65 years old.[43] In our study mean age of the deceased patients was 78.8 years (standard deviation 9.07). In literature the median duration of hospitalisation for patients who recovered depends on the population under testing[44]. In a study conducted in Belgium the length of stay for hospitalized patients who recovered depended on age. In the same study males seem to need longer time to recover as compared to females.[44] Our results showed no statistically significant difference between age and gender towards days of hospitalisation.

Data from Centers for Disease Control and Prevention show that patients older than 85 years have a rate of death 340 times higher compared to adult patients less than 29 years old.[45] In our study was observed a statistically significant difference in the mean age of hospitalized patients who recovered and those who ended up. Mean age of the deceased patients was 78.8 years (standard deviation 9.07). Our findings suggest that age seems to be a key factor for survival for hospitalized patients regardless of underlying medical conditions.

6. Conclusion

Common initial laboratory findings of COVID-19 patients who seek for the first-time medical assistant regardless of comorbidities and day from onset of symptoms can give clues to the patient outcome. Age is also important for patients' survival. Especially in a Primary Health Care Setting, parameters like WBC count, neutrophil and lymphocyte percentage, platelet count, glucose, urea, creatinine, SGOT, CK, LDH, GGT, sodium, calcium, high sensitivity Troponin I, and ferritin levels, could be helpful to predict disease severity.

7. Limitations of the study

Though the sample size may seem small regarding the number of tested parameters, the authors consider it representative to draw safe conclusions, as it enrolls all symptomatic adult patients.

Ethical Approval

The present study has taken approval from the Ethical and Scientific Board of both Hospital branches and exempt the need for consent.

Conflict of Interest Statement The authors declare that they have no competing interests.

Availability of data and material: The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

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