



ASSESSMENT OF HAPPY HYPOXIA CASES OBSERVED IN MEDICAL HOSPITALS OVER A PERIOD OF 6 MONTHS

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Abstract

Aim: To assess happy hypoxia cases observed in medical hospitals.

Methodology: One hundred twenty-eight cases of happy hypoxia involving both genders were included. Clinical symptoms, laboratory parameters and the level of PaO₂, PaO₂:FIO₂ and PaCO₂ level was recorded.

Results: Out of 128 patients, males were 78 (61%) and females were 50 (39%). BMI found to be <18.5 kg/m² in 35, 18.5-24.9 kg/m² in 32 and >24.9 kg/m² in 65. Clinical features comprise of fever in 128, nausea/vomiting in 93, abdominal pain in 45, diarrhea in 39 and breathlessness in 114. Co-morbidities were diabetes mellitus in 62, CKD in 14, chronic liver disease in 6, malignancy in 5, COPD in 54, hypertension in 67 and smoking in 45. Vitals recorded was heart rate was 114.6 beats/minute, respiratory rate 32.5 cycles/minute and mean arterial pressure (MAP) 36.4 mm Hg. WBC found to be 15.2X10⁹/L, neutrophil 4.9 X10⁹/L, lymphocyte 8.3 X10⁹/L, monocyte 1.6 X10⁹/L and platelets 162 X10⁹/L. d-dimer was 2890 mg/dl, LDH was 872.4 U/L and IL-6 was 112.7. The mean prothrombin time recorded was 19.2 seconds and PTT was 42.8 seconds. The mortality cases were 65 (50.7%). The difference was significant (P< 0.05). The mean PaO₂ was 58.2%, PaO₂:FIO₂ was 134.7% and PaCO₂ was 60.4%. Out of 65 mortality cases (50.7%), the risk factors found to be BMI >24.9 kg/m² in 45, age >65 years in 56, diabetes mellitus in 38, CKD in 11, PaO₂ <65% in 36 and d-dimer >2500 mg/dl in 57 cases.

Conclusion: The mortality rate found to be 50.9%. Risk factors of mortality in happy hypoxemia cases was age >65 years, BMI >24.9 kg/m², diabetes mellitus, CKD, PaO₂ <65% and d- dimer >2500 mg/dl.

Keywords: COVID-19, Diabetes mellitus, Happy hypoxia, Oxygen Saturation, Prevalence, Vitals

Introduction

COVID-19 virus infection is caused by SAR- COV- 19 known as severe acute respiratory syndrome- corona virus 2 is a serious life threatening infection first reported by China in its city Wuhan.[1]The first case was reported in December 2019 which later on spread all over the world and world health organization called it pandemic.[2]As this first found to be the shape of crown, hence the name corona was given to it.[3,4]

Earlier as it was new to the world, all were anxious about it. Later on, with more research, it was found to have mild, moderate, severe and critical forms.[5] Signs and symptoms comprise of nausea, vomiting, high grade fever, loss of taste, smell, abdominal pain, diarrhea, breathlessness, dyspnea etc. The main effect of this virus in on oxygen level of the body.[6] Most of the patients complain of difficulty in breathing with fall in oxygen saturation level.[7]Its level below 90% found to be alarming sign. In some cases, fall of oxygen saturation level without occurrence of dyspnea known as happy or silent hypoxia may be reported.[8]

In mild and moderate cases, home care with management of cough, fever and maintenance of hydration is sufficient to cure the disease.[9] Silent hypoxia in home isolated patients took many useful lives and high mortality was found.[10]This research focusses on recording happy hypoxia cases observed in medical hospitals over a period of 6 months.

Methodology

This hospital- based study recorded one hundred twenty- eight cases of happy hypoxia involving both genders. The approval to conduct this research was obtained from research & review committee. The study was based on declaration of Helsinki criteria taking patients or their relative’s approval.

The inclusion criteria was all COVID- 19 happy hypoxia cases and cases reported in last 6 months. Exclusion criteria was those who had received oxygen before hospital admission.

Baseline parameters such as age, name, gender etc. was entered in case history proforma. Height (cm) and weight (Kg), body mass index (BMI) was recorded. History of smoking, diabetes mellitus, chronic obstructive pulmonary disease, chronic kidney disease, chronic liver disease, hypertension and malignancy was taken. Clinical symptoms were recorded. Heart rate, respiratory rate, mean arterial pressure (MAP mm Hg) was recorded. Laboratory parameters comprises of complete blood count, d-dimer, IL- 6, prothrombin level, pTT level and lactate dehydrogenase level (LDH). The level of PaO₂, PaO₂:FIO₂ and PaCO₂ level was recorded. Mortality rate was recorded. The results were compiled and subjected for statistical analysis using Mann Whitney U test. P value less than 0.05 was set significant.

Results

Table I Patients distribution

Total- 128		
Gender	Male	Female
Number	78	50

Out of 128 patients, males were 78 (61%) and females were 50 (39%) (Table I).

Table II Assessment of parameters

Parameters	Variables	Number	P value
BMI (kg/m ²)	<18.5	35	0.05
	18.5-24.9	32	
	>24.9	65	
Clinical features	Fever	128	0.94
	Nausea/vomiting	93	
	Abdominal pain	45	
	Diarrhea	39	
	breathlessness	114	
Co- morbidities	Diabetes mellitus	62	0.05
	CKD	14	
	Chronic liver disease	6	
	Malignancy	5	
	COPD	54	
	Hypertension	67	
	Smoking	45	
Vitals	Heart rate	114.6	-
	Respiratory rate	32.5	-
	MAP	36.4	-
CBC	WBC 10 ⁹ /L	15.2	-
	Neutrophil 10 ⁹ /L	4.9	-
	Lymphocyte 10 ⁹ /L	8.3	-
	Monocyte 10 ⁹ /L	1.6	-
	Platelets 10 ⁹ /L	162	-
d- dimer (mg/dl)		2890	-
LDH (U/L)		872.4	-
IL- 6		112.7	-
Prothrombin (seconds)		19.2	-
PTT (seconds)		42.8	-
Mortality (number)		65	-

BMI found to be <18.5 kg/m² in 35, 18.5-24.9 kg/m² in 32 and >24.9 kg/m² in 65. Clinical features comprise of fever in 128, nausea/vomiting in 93, abdominal pain in 45, diarrhea in 39 and breathlessness in 114. Co- morbidities were diabetes mellitus in 62, CKD in 14, chronic liver disease in 6, malignancy in 5, COPD in 54, hypertension in 67 and smoking in 45. Vitals recorded was heart rate was 114.6 beats/minute, respiratory rate 32.5 cycles/minute and mean arterial pressure (MAP) 36.4 mm Hg. WBC found to be 15.2X10⁹/L, neutrophil 4.9 X10⁹/L, lymphocyte 8.3 X10⁹/L, monocyte 1.6 X10⁹/L and platelets 162 X10⁹/L. d- dimer was 2890 mg/dl, LDH was 872.4 U/L and IL- 6 was 112.7. The mean prothrombin time recorded was 19.2 seconds and PTT was 42.8 seconds. The mortality cases were 65 (50.7%). The difference was significant (P< 0.05) (Table II).

Table III Assessment of oxygen saturation

Parameters	Mean	SD
PaO ₂	58.2	2.3
PaO ₂ :FIO ₂	134.7	12.1
PaCO ₂	60.4	9.5

The mean PaO₂ was 58.2%, PaO₂:FIO₂ was 134.7% and PaCO₂ was 60.4% (Table III).

Table IV Risk factors and mortality rate

Risk factors	Number	P value
BMI >24.9 kg/m ²	45	0.17
Age >65 years	56	
Diabetes mellitus	38	
CKD	11	
PaO ₂ <65%	36	
d- dimer >2500 mg/dl	57	

Out of 65 mortality cases (50.7%), the risk factors found to be BMI >24.9 kg/m² in 45, age >65 years in 56, diabetes mellitus in 38, CKD in 11, PaO₂ <65% in 36 and d- dimer >2500 mg/dl in 57 cases.

Discussion

COVID-19 infection is the recent pandemic recorded in year 2019.[11,12] First wave involved mostly elderly patients especially with co- morbidities whereas second wave affected all age groups especially young adults.[13,14] Happy hypoxia cases found to be serious as most of the patients were unaware of the fact that they are suffering from it.[15,16]A careful evaluation of oxygen saturation is of paramount importance as sudden fall of oxygen level.[17,18]We have planned this study to record happy hypoxia cases observed in medical hospitals over a period of 6 months.

Our results showed that out of 128 patients, males were 78 (61%) and females were 50 (39%). BMI found to be <18.5 kg/m² in 35, 18.5-24.9 kg/m² in 32 and >24.9 kg/m² in 65. Clinical features comprise of fever in 128, nausea/vomiting in 93, abdominal pain in 45, diarrhea in 39 and breathlessness in 114. Co- morbidities were diabetes mellitus in 62, CKD in 14, chronic liver disease in 6, malignancy in 5, COPD in 54, hypertension in 67 and smoking in 45. Bepouka et al[19] found that off the 25,086 COVID-19 patients, the prevalence of happy hypoxia ranged from 4.8 to 65%. In our study we found that the prevalence found to be 50.7% (65).

It was observed in our study that vitals recorded was heart rate was 114.6 beats/minute, respiratory rate 32.5 cycles/minute and mean arterial pressure (MAP) 36.4 mm Hg. WBC found to be 15.2X10⁹/L, neutrophil 4.9 X10⁹/L, lymphocyte 8.3 X10⁹/L, monocyte 1.6 X10⁹/L and platelets 162 X10⁹/L. d- dimer was 2890 mg/dl, LDH was 872.4 U/L and IL- 6 was 112.7. The mean prothrombin time recorded was 19.2 seconds and PTT was 42.8 seconds. Bepouka et al[19] et al observed that happy hypoxia was associated with age > 65 years, male gender, body mass index > 25 kg/m², smoking, COPD, diabetes mellitus, high respiratory rate, and high d-dimer.

Our results showed that the mean PaO₂ was 58.2%, PaO₂:FIO₂ was 134.7% and PaCO₂ was 60.4%. The risk factors found to be BMI >24.9 kg/m² in 45, age >65 years in 56, diabetes mellitus in 38, CKD in 11, PaO₂ <65% in 36 and d- dimer >2500 mg/dl in 57 cases. In a study by Alhusainet al[20] pO₂ < 90% was seen in 13% who were diagnosed with silent hypoxia. 34% patients required intubation and 60% admission to intensive care unit (ICU). Authors of the study did not report link between dyspnea and gender, age group, body mass index, or comorbidity. Age and obesity were significantly associated with a decrease in survival, and an increase in the initial SpO₂ increased survival. Busanaet al[21] found happy hypoxemia in 31.9% patients. 26% of silent and 38.6% dyspneic patients were admitted to the ICU respectively.

Conclusion

Authors found that the mortality rate found to be 50.9%. Risk factors of mortality in happy hypoxemia cases was age >65 years, BMI >24.9 kg/m², diabetes mellitus, CKD, PaO₂ <65% and d- dimer >2500 mg/dl.

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