

AIM OF THE WORK

The aim of the work was to compare between the use of entral simvastatin versus placebo in addition to usual medications including appropriate antibiotics in mechanically ventilated patients 48hours after intubation and with suspicion to VAP as regards:

1. ICU stay length.
2. Ventilator days.
3. Morbidity complications (ARDS).
4. 28 days mortality.

PATIENTS

This prospective study will be carried out on 60 patients receiving mechanical ventilation more than 48 hours with suspension of VAP using medcalc version 12 method. These patients admitted consecutively to critical care units at Alexandria university main hospital.

Patients will be randomized in two groups using closed envelope method of randomization.

- ❖ **Group I:** Will include 30 patients receiving simvastatin 60mg/ day in addition to usual therapy including appropriate antibiotics in suspected patient with VAP.
- ❖ **Group II:** Will include 30 patients receiving placebo on mechanical ventilation as control group with usual therapy including appropriate antibiotics in suspected patient with VAP.

Inclusion criteria:

1. Adult patient with age more than 18 years.
2. First episode of suspicion of VAP with a clinical pulmonary infection score (CPIS) ≥ 5 .
3. Receiving mechanical ventilation more than 48 hours.

Exclusion criteria:

1. Patients died or weaned from mechanical ventilation in less than 48 hours of mechanical ventilation.
2. Age ≤ 18 years old.
3. Pregnant women.
4. Severe chronic liver disease.
5. Patient unable to receive or unlikely absorb enteral drug.
6. Simvastatin treatment received under mechanical ventilation for another disease.
7. Simvastatin specific exclusions, allergy or intolerance.

This study could include trauma patients, sepsis patients independent of its source, cerebrovascular accident patients

METHODS

- ❖ Informed consent was taken from next of kin of patients according to ethical committee recommendation of Alexandria Faculty of medicine.
- ❖ The following data was collected:
 1. Demographic data as name, age or sex.
 2. Medical history.
 3. Full clinical examination.
 4. Measurement of :
 - Vital signs (blood pressure, heart rate, respiratory rate, temperature), on admission, on 48 hours after admission and every 4 hours.
 - Arterial blood gases for assessment of respiratory failure and hypoxic index measurement and indications for mechanical ventilation at admission or after admission, then arterial blood gases every 6 hours for assessment of the effect of simvastatin and placebo on oxygen tension (PaO₂) and as long as patient on mechanical ventilation and for 24 hours after weaning from mechanical ventilation then every 24 hours until discharge.

Every day assessment by using venous blood sample for:

- Complete blood count, and sepsis markers (c- reactive protein) every 48 hours for evaluating sepsis status and progression of the patient condition.
 - Hepatic function tests (total and direct bilirubin) and liver enzymes, serum glutamic oxaloacetic acid transaminase and serum glutamic pyruvic transaminase (SGOT, SGPT) this in order to follow up effect of simvastatin on liver profile as a side effect and renal functions (urea, creatinine).
 - Daily chest x ray for assessment of gross chest condition and follow up progression of VAP (as improvement or deterioration).
 - Sputum culture (mini-bal) at 1st day of VAP suspicion and as required later(as no response to antibiotics , deterioration of patient condition) .
 - Sequential Organ Failure Assessment (SOFA) score on admission and every day calculation.⁽¹³⁵⁾
- **Respiratory System**

PaO ₂ /FiO ₂ (mmHg)	SOFA score
< 400	1
< 300	2
< 200 and mechanically ventilated	3
< 100 and mechanically ventilated	4

• *Nervous System*

Glasgow coma scale	SOFA score
13 – 14	1
10 – 12	2
6 – 9	3
< 6	4

• *Cardio Vascular System*

Mean Arterial Pressure OR administration of vasopressors required	SOFA score
MAP < 70 mm/Hg	1
dop ≤ 5 or dob (any dose)	2
dop > 5 OR epi ≤ 0.1 OR nor ≤ 0.1	3
dop > 15 OR epi > 0.1 OR nor > 0.1	4

• *Liver*

Bilirubin (mg/dl) [μmol/L]	SOFA score
1.2 – 1.9 [>20 - 32]	1
2.0 – 5.9 [33 - 101]	2
6.0 – 11.9 [102 - 204]	3
> 12.0 [>204]	4

• *Coagulation*

Platelets × 10 ³ / mcl	SOFA score
< 150	1
< 100	2
< 50	3
< 20	4

• *Renal System*

Creatinine (mg/dl) [μmol/L] (or urine output)	SOFA score
1.2 – 1.9 [110 - 170]	1
2.0 – 3.4 [171 - 299]	2
3.5 – 4.9 [300 - 440] (or < 500 ml/d)	3
> 5.0 [>440] (or < 200 ml/d)	4

Table no. (4): SOFA score components

CPIS every day for evaluation of response of the patient to enteric (nasogastric ,orogastric) simvastatin 60mg and assess if the patient is improving or deteriorating until weaning from mechanical ventilation. .⁽¹³⁶⁾

Table of CPIS

Parameter	Score (check all that apply)
Temperature (Celsius)	≥ 36.5 and ≤ 38.4 ≥ 38.5 and ≤ 38.9 ≥ 39.0 or ≤ 36.5
White Blood Cell Count	$\geq 4,000$ and $\leq 11,000$ $< 4,000$ or $> 11,000$ $< 4,000$ or $> 11,000$ AND band forms $\geq 50\%$
Tracheal Secretions	None or scant Non-purulent Purulent
PaO₂/FiO₂ (*ARDS is defined as a PaO ₂ /FiO ₂ ≤ 200 , PAOP ≤ 18 mmHg, and acute bilateral infiltrates)	> 240 , ARDS* or pulmonary contusion ≤ 240 and no ARDS*
Chest Radiograph	No infiltrate Diffuse (or patchy) infiltrate Localized infiltrate

Table no.(5) CPIS score

- Quantitative cultures will be performed for microbiological confirmation of VAP with minibal
 - ❖ Group (I); case group; will receive enteral(nasogastric,orogastric) simvastatin 60mg per day after 48hours of intubation and for 28 days or discharged/ death from/ in ICU provided that VAP signs start to appear (new onset fever, leukocytosis, new radiological signs, profuse purulent or mucoid secretions)
 - ❖ Group (2) ; control group; will receive placebo and follow up patients as case group characters

Patients will be followed until discharge/ death, and the outcome will be recorded as regards:

- ICU stay.
- Duration of mechanical ventilation.
- Morbidity complications (ARDS)
- 28 days mortality.

This laboratory and radiological measures were done in every patient among 60 patients 30 patients as cases and 30 patients as control to evaluate response to enteric simvastatin 60 mg.

Statistical analysis of the data

Data were fed to the computer and analyzed using IBM *SPSS software package version 20.0*. Qualitative data were described using number and percent. Quantitative data were described using Range (minimum and maximum), mean, standard deviation and median. Comparison between different groups regarding categorical variables was tested using Chi-square test. When more than 20% of the cells have expected count less than 5, correction for chi-square was conducted using Fisher's Exact test or Monte Carlo correction. The distributions of quantitative variables were tested for normality using Kolmogorov-Smirnov test, Shapiro-Wilk test and D'Agstino test, also Histogram and QQ plot were used for vision test. If it reveals normal data distribution, parametric tests was applied. If the data were abnormally distributed, non-parametric tests were used. For normally distributed data, comparison between two independent population were done using independent t-test. For abnormally distributed data, comparison between two independent population were done using Mann Whitney test. Significance of the obtained results was judged at the 5% level.

RESULTS

This study was conducted on 60 patients above age of 18 years .30 male patients and 30 female patients

There is no significant statistical difference between 2 groups

Table (6): Comparison between the studied groups according to demographic data

	Cases (n=30)		Control (n=30)		Test of Sig.	p
	No.	%	No.	%		
Sex						
Male	15	50.0	15	50.0	$\chi^2= 0.0$	1.000
Female	15	50.0	15	50.0		
Age						
Min. – Max.	24.0 – 81.0		29.0 – 89.0		t = 1.486	0.143
Mean \pm SD.	47.47 \pm 16.21		53.80 \pm 16.80			
Median	44.0		51.50			

t: Student t-test

χ^2 : Value for chi square

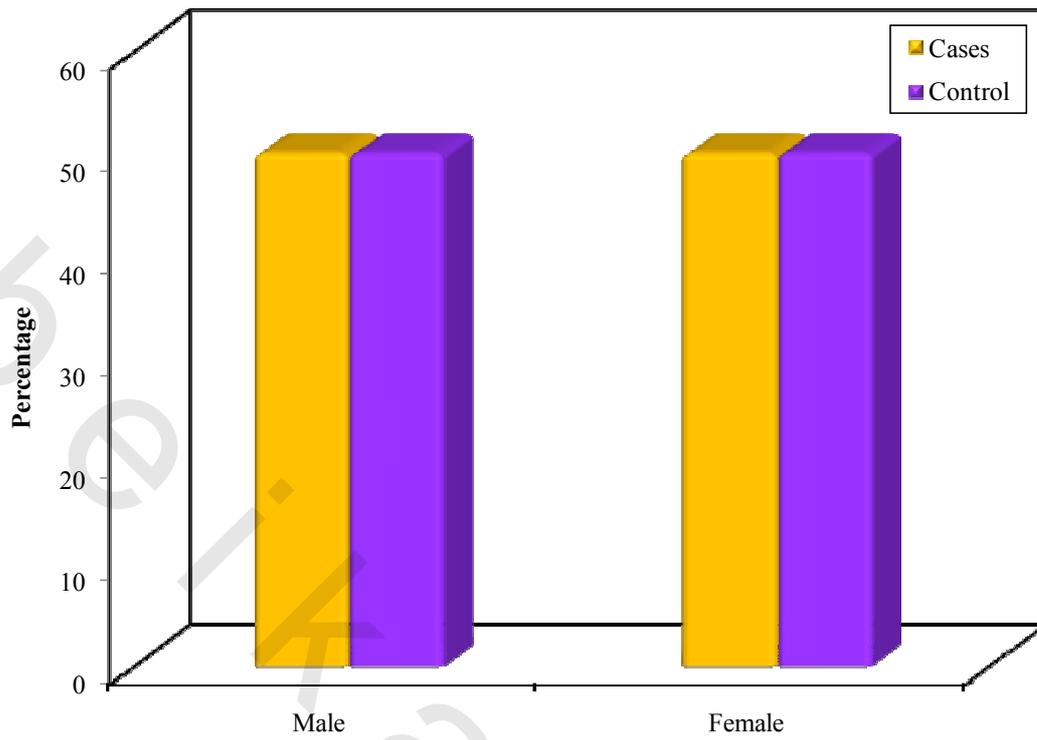


Figure (13): Comparison between the studied groups according to sex

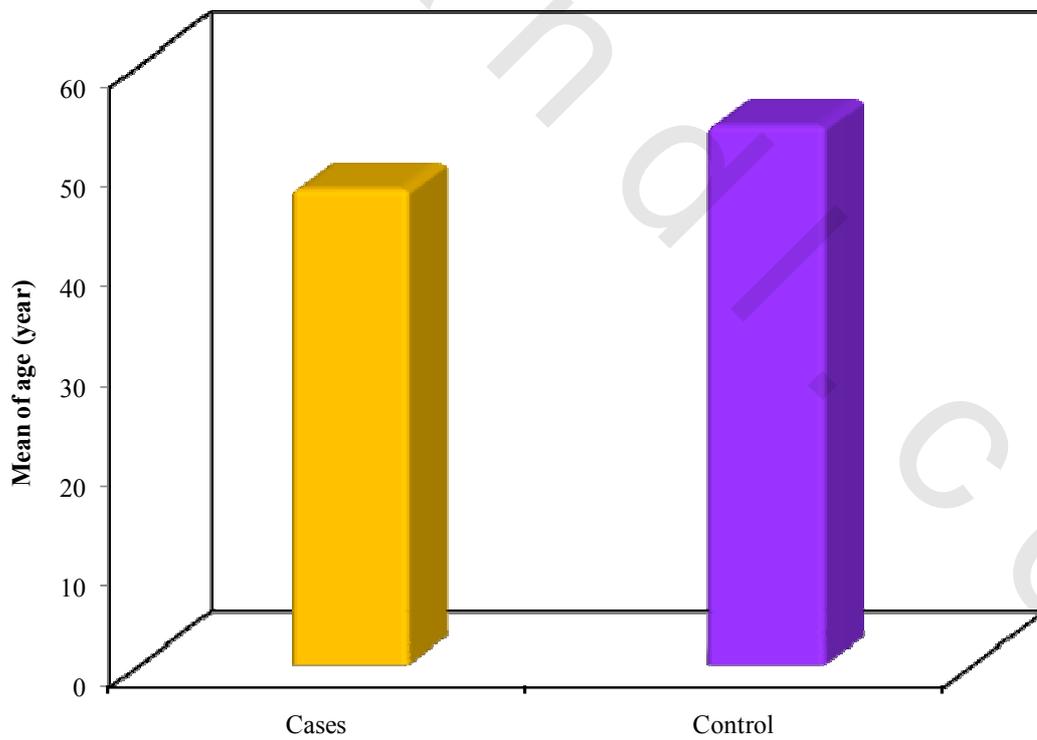


Figure (14): Comparison between the studied groups according to age

Results

There was no significant statistical difference between 2 groups according to past medical history.

Table (7): Comparison between the studied groups according to demographic data

	Cases (n=30)		Control (n=30)	
	No.	%	No.	%
Past medical history				
No past history	10	33.3	10	33.3
DM	13	43.3	13	43.3
HTN	12	40.0	12	40.0
IHD	3	10.0	3	10.0

Results

This study was conducted on 60 patients according to presentation to ICU. There was no significant statistical difference between 2 groups according to presentation.

Table (8): Comparison between the studied groups according to demographic data

	Cases (n=30)		Control (n=30)	
	No.	%	No.	%
Presentation				
Trauma	15	50.0	15	50.0
Chest infection	5	16.7	5	16.7
CNS	10	33.3	10	33.3

According to systolic blood pressure measured by mm hg .there was no significant statistical difference between 2 groups.

Tables (9): Comparison between the two studied groups according to systolic blood pressure

Cases	Admission	Systolic blood pressure (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Min.	(n = 30) 60.0	(n = 30) 80.0	(n = 30) 80.0	(n = 30) 70.0	(n = 30) 60.0	(n = 27) 70.0	(n = 27) 60.0	(n = 18) 70.0	(n = 16) 60.0	(n = 8) 70.0	(n = 5) 70.0	(n = 4) 120.0	(n = 1) 130.0	(n = 1) 120.0	(n = 1) 120.0
Max.	240.0	200.0	220.0	180.0	170.0	160.0	150.0	150.0	140.0	140.0	120.0	130.0	130.0	120.0	120.0
Mean	118.33	115.67	110.0	104.33	105.0	108.89	110.0	106.11	104.38	103.75	106.0	127.50	130.0	120.0	120.0
SD.	53.37	34.31	36.48	27.75	25.56	24.86	22.53	20.62	22.79	22.0	20.74	5.0	-	-	-
Median	90.0	100.0	100.0	100.0	100.0	100.0	110.0	110.0	105.0	100.0	110.0	130.0	130.0	120.0	120.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 29)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	60.0	80.0	90.0	70.0	70.0	80.0	60.0	60.0	60	60	60	60	60	90	
Max.	240.0	230.0	180.0	160.0	150.0	150.0	150.0	150.0	140	140	120	120	120	100	
Mean	130.0	127.33	124.67	118.67	115.17	112.92	110.0	114.29	113.75	112.86	106.67	106.00	97.50	95.00	-
SD.	54.96	39.75	29.91	30.14	22.78	18.76	25.98	24.72	28.25	24.98	23.38	26.08	26.30	7.07	
Median	100.0	100.0	105.0	115.0	120.0	115.0	120.0	120.0	125	120	115	120	105	95	
T	0.834	1.182	1.703	1.916	1.612	0.647	0.0	1.020	0.878	0.751	0.049	1.604	1.105	2.887	
P	0.408	0.500	0.094	0.060	0.113	0.521	1.000	0.316	0.389	0.466	0.962	0.153	0.350	0.212	

t: Student t-test

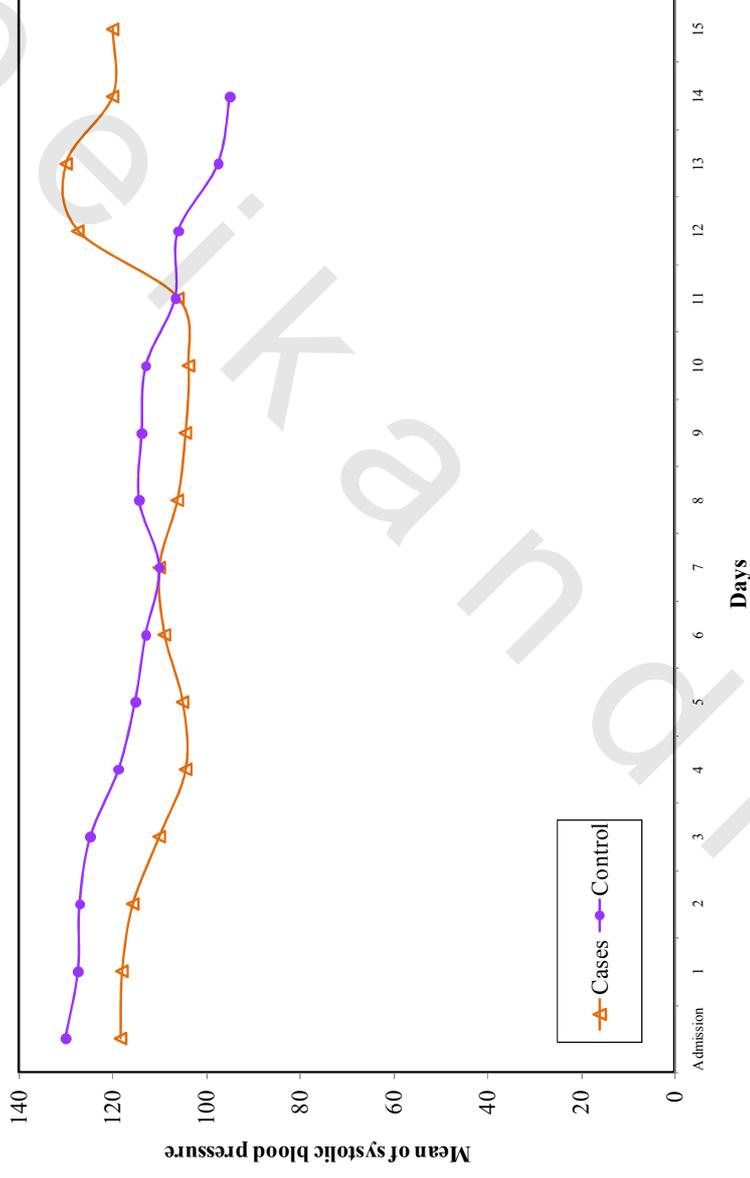


Figure (15): Comparison between the two studied groups according to systolic blood pressure

According to diastolic blood pressure measured by mm hg .there was no significant statistical difference between 2 groups.

Tables (10): Comparison between the two studied groups according to diastolic blood pressure

Cases	Admission	Diastolic blood pressure (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Min.	30.0	30.0	50.0	40.0	45.0	30.0	30.0	40.0	30.0	30.0	30.0	30.0	40.0	80.0	80.0	70.0
Max.	160.0	100.0	140.0	110.0	90.0	90.0	90.0	90.0	80.0	90.0	90.0	90.0	80.0	80.0	90.0	70.0
Mean	72.67	72.33	70.0	66.0	64.17	67.04	68.52	65.56	63.75	66.25	64.0	64.0	64.0	85.0	80.0	70.0
SD.	34.23	34.41	16.40	16.78	16.51	14.63	16.10	13.38	16.28	19.96	16.73	5.77	5.77	-	-	-
Median	60.0	70.0	60.0	60.0	60.0	70.0	70.0	65.0	70.0	70.0	60.0	60.0	85.0	80.0	90.0	70.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 29)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 4)	(n = 2)	(n = 0)
Min.	30.0	50.0	50.0	40.0	50.0	40.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	56	
Max.	140.0	120.0	100.0	100.0	90.0	100.0	90.0	90.0	85.0	83.0	70.0	70.0	70.0	70.0	58	
Mean	76.0	73.67	75.33	72.33	73.45	72.50	67.65	68.57	64.25	64.71	61.00	59.60	57.00	57.00	57.00	-
SD.	29.20	26.59	14.56	17.75	13.17	15.11	18.55	19.94	16.91	16.70	15.63	17.05	18.51	18.51	1.41	
Median	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	68	68	64	64	57	
T	0.406	1.361	1.588	1.420	2.382*	1.311	0.165	0.511	0.070	0.160	0.307	2.819*	1.111	19.053*		
P	0.686	0.867	0.118	0.161	0.021*	0.196	0.870	0.613	0.945	0.875	0.766	0.026*	0.347	0.033*		

t: Student t-test

*: Statistically significant at $p \leq 0.05$

According to heart rate measured by beat/min .there was no significant statistical difference between 2 groups

Tables (11): Comparison between the two studied groups according to heart rate

Cases	Admission	Heart rate (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Min.	(n = 30) 50.0	(n = 30) 60.0	(n = 30) 57.0	(n = 30) 49.0	(n = 30) 60.0	(n = 27) 70.0	(n = 27) 66.0	(n = 18) 68.0	(n = 16) 70.0	(n = 8) 67.0	(n = 5) 55.0	(n = 4) 70.0	(n = 1) 90.0	(n = 1) 96.0	(n = 1) 85.0
Max.	(n = 30) 160.0	(n = 30) 145.0	(n = 30) 130.0	(n = 30) 156.0	(n = 30) 130.0	(n = 27) 140.0	(n = 27) 146.0	(n = 18) 142.0	(n = 16) 150.0	(n = 8) 150.0	(n = 5) 100.0	(n = 4) 100.0	(n = 1) 90.0	(n = 1) 96.0	(n = 1) 85.0
Mean	(n = 30) 101.77	(n = 30) 103.73	(n = 30) 108.63	(n = 30) 107.50	(n = 30) 104.90	(n = 27) 103.74	(n = 27) 102.78	(n = 18) 102.17	(n = 16) 99.81	(n = 8) 96.25	(n = 5) 84.60	(n = 4) 80.50	(n = 1) 90.0	(n = 1) 96.0	(n = 1) 85.0
SD.	(n = 30) 26.93	(n = 30) 17.74	(n = 30) 17.75	(n = 30) 18.90	(n = 30) 16.91	(n = 27) 16.63	(n = 27) 21.32	(n = 18) 18.28	(n = 16) 22.87	(n = 8) 24.04	(n = 5) 17.20	(n = 4) 13.33	(n = 1) -	(n = 1) -	(n = 1) -
Median	(n = 30) 100.0	(n = 30) 100.0	(n = 30) 111.0	(n = 30) 101.0	(n = 30) 100.0	(n = 27) 100.0	(n = 27) 100.0	(n = 18) 99.50	(n = 16) 90.50	(n = 8) 90.0	(n = 5) 90.0	(n = 4) 76.0	(n = 1) 90.0	(n = 1) 96.0	(n = 1) 85.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 29)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	50.0	60.0	60.0	79.0	70.0	78.0	78.0	78.0	80	80	80	80	80	78	
Max.	148.0	120.0	121.0	148.0	130.0	130.0	140.0	149.0	130	125	120	110	100	80	
Mean	92.57	99.40	100.50	100.73	102.31	99.46	102.29	96.86	96.63	91.43	91.50	88.60	85.75	79.00	-
SD.	27.31	15.58	15.98	18.57	17.60	15.86	20.32	23.88	20.42	15.47	14.40	12.14	9.60	1.41	
Median	90.0	101.0	100.0	95.0	100.0	97.0	95.0	89.0	90	90	87	85	81.5	79	
T	0.990	1.314	1.866	1.398	0.576	0.938	0.075	0.713	0.333	0.454	0.725	0.954	0.396	9.815	
P	0.326	0.194	0.067	0.167	0.567	0.353	0.941	0.481	0.742	0.658	0.487	0.372	0.719	0.065	

t: Student t-test

According to respiratory rate measured by breath/min .there was no significant statistical difference between 2 groups

Tables (12): Comparison between the two studied groups according to respiratory rate

Cases	Admission	Respiratory rate (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Min.	(n = 30)	8.0	12.0	12.0	16.0	20.0	19.0	20.0	20.0	18.0	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Max.	(n = 30)	50.0	40.0	40.0	40.0	44.0	34.0	40.0	35.0	40.0	(n = 16)	(n = 8)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Mean	(n = 30)	28.53	27.40	29.30	30.13	28.33	27.26	26.81	26.17	25.75	(n = 17)	(n = 6)	(n = 5)	(n = 4)	(n = 1)	(n = 1)
SD.	(n = 30)	11.51	6.08	5.74	4.91	5.45	4.73	5.56	4.26	6.59	(n = 14)	(n = 6)	(n = 5)	(n = 4)	(n = 1)	(n = 1)
Median	(n = 30)	30.0	28.0	30.0	30.0	29.0	28.0	25.0	25.0	23.0	(n = 17)	(n = 6)	(n = 5)	(n = 4)	(n = 1)	(n = 1)
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	(n = 30)	8.0	12.0	20.0	23.0	21.0	18.0	20.0	21.0	23	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Max.	(n = 30)	44.0	40.0	38.0	43.0	44.0	38.0	44.0	40.0	38	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Mean	(n = 30)	27.0	27.60	29.03	29.33	30.48	26.96	28.71	27.0	27.38	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
SD.	(n = 30)	10.54	6.59	4.52	4.72	5.48	5.31	8.49	7.16	6.63	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Median	(n = 30)	30.0	27.50	30.0	29.0	30.0	28.0	24.0	24.0	24	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
T	0.555	0.538	0.122	0.200	0.643	1.481	0.214	0.815	0.410	0.568	0.035	0.126	1.428	0.489	6.351	
P	0.581	0.592	0.903	0.842	0.523	0.144	0.831	0.423	0.684	0.575	0.972	0.902	0.196	0.658	0.099	

t: Student t-test

According to temperature measured by celsius .there was no significant statistical difference between 2 groups

Tables (13): Comparison between the two studied groups according to temperature

	Admission	Temperature (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 27)	(n = 18)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Min.	35.50	35.70	36.0	36.0	37.0	37.0	35.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0
Max.	41.0	41.0	38.70	39.0	41.0	39.0	39.70	39.0	39.0	40.0	39.0	38.10	37.50	37.0	37.0	37.0
Mean	37.38	37.52	37.17	37.83	38.01	37.74	37.48	37.72	37.71	37.49	37.34	37.13	37.13	37.0	37.0	37.0
SD.	1.28	1.05	0.48	0.89	0.97	0.68	0.93	0.86	0.99	0.75	0.50	0.25	0.25	-	-	-
Median	37.0	37.0	37.0	37.55	38.0	37.60	37.0	37.25	37.0	37.0	37.0	37.0	37.0	37.0	37.0	37.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 26)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	35.0	17.0	37.0	37.0	37.0	37.0	35.0	37.0	37.0	37	37	37	37	37	36.8	
Max.	39.60	37.40	38.0	39.30	39.0	39.0	39.0	39.0	39.0	38.5	37.8	37.5	37.5	37.5	37	
Mean	37.20	36.32	37.06	37.77	38.0	37.55	37.16	37.47	37.34	37.34	37.14	37.12	37.10	37.13	36.90	-
SD.	1.0	3.66	0.23	0.89	0.82	0.66	1.07	0.84	0.58	0.58	0.30	0.20	0.22	0.25	0.14	
Median	37.0	37.0	37.0	37.0	38.25	37.0	37.0	37.0	37.0	37	37	37	37	37	36.9	
T	0.608	1.727	1.092	0.233	0.057	1.054	1.048	0.828	0.965	1.199	0.939	0.939	0.158	0.447	0.577	
P	0.545	0.090	0.281	0.817	0.954	0.297	0.301	0.414	0.345	0.260	0.260	0.390	0.879	0.685	0.667	

t: Student t-test

This study was conducted on 60 patients according to PH .there was no significant statistical difference between 2 groups

Tables (14): Comparison between the two studied groups according to pH

	Admission	pH (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Min.	6.90	7.08	7.19	7.20	7.08	6.90	7.01	6.90	7.00	6.80	7.10	7.40	7.41	7.41	7.41
Max.	7.40	7.43	7.50	7.45	7.42	7.45	7.45	7.43	7.41	7.42	7.42	7.45	7.41	7.41	7.41
Mean	7.22	7.29	7.34	7.31	7.31	7.32	7.35	7.31	7.31	7.30	7.34	7.43	7.41	7.41	7.41
SD.	0.11	0.09	0.07	0.08	0.09	0.12	0.09	0.15	0.15	0.21	0.13	0.03	-	-	-
Median	7.20	7.30	7.34	7.31	7.31	7.37	7.38	7.38	7.40	7.38	7.39	7.43	7.41	7.41	7.41
Control	(n = 30)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)				
Min.	7.00	7.19	7.29	7.12	6.90	6.92	7.01	6.90	6.9	6.9	6.9	6.9	6.9	7.1	
Max.	7.40	7.44	7.43	7.48	7.46	7.43	7.43	7.45	7.43	7.4	7.4	7.4	7.3	7.3	
Mean	7.20	7.32	7.35	7.36	7.33	7.33	7.34	7.32	7.25	7.25	7.24	7.16	7.15	7.20	-
SD.	0.10	0.08	0.04	0.07	0.11	0.11	0.12	0.17	0.22	0.19	0.19	0.18	0.17	0.14	
Median	7.20	7.32	7.34	7.37	7.36	7.34	7.39	7.40	7.37	7.36	7.28	7.2	7.2	7.2	
T	0.731	1.248	0.154	2.603*	0.773	0.445	0.319	1.057	0.890	0.533	0.971	2.850*	1.343	1.212	
P	0.468	0.217	0.878	0.012*	0.443	0.658	0.751	0.297	0.383	0.603	0.357	0.025*	0.272	0.439	

t: Student t-test

*: Statistically significant at $p \leq 0.05$

This study was conducted on 60 patients according to PCO₂ measured by mm hg .there was no significant statistical difference between 2 groups

Tables (15): Comparison between the two studied groups according to PCO₂

	Admission	PCO ₂ (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Min.	28.0	25.0	29.0	30.0	32.0	31.0	30.0	33.0	30.0	36.0	34.0	33.0	37.0	38.0	36.0
Max.	81.0	55.0	49.0	69.0	60.0	80.0	52.0	81.0	78.0	66.0	40.0	36.0	37.0	38.0	36.0
Mean	47.63	41.60	38.37	42.93	41.03	40.77	39.19	44.18	42.06	44.13	37.40	34.50	37.0	38.0	36.0
SD.	12.16	7.52	4.62	7.92	6.07	9.36	5.10	13.88	12.11	10.87	2.19	1.29	-	-	-
Median	44.0	40.50	39.0	41.0	40.0	39.0	39.0	38.0	38.0	39.50	38.0	34.50	37.0	38.0	36.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	18.0	28.0	29.0	28.0	36.0	27.0	32.0	32.0	35	35	35	34	30	30	
Max.	65.0	47.0	51.0	65.0	56.0	90.0	66.0	70.0	75	65	60	55	55	35	
Mean	45.03	39.10	39.97	38.80	41.57	40.81	41.0	43.76	45.88	41.00	40.33	39.40	38.50	32.50	-
SD.	11.77	5.05	5.11	7.73	4.86	10.91	8.71	12.77	16.57	10.72	9.79	8.85	11.21	3.54	
Median	48.50	40.0	39.50	39.0	40.0	39.0	39.50	36.0	38.5	38	36.5	35	34.5	32.5	
T	0.842	1.512	1.272	2.045*	0.376	0.018	0.920	0.583	0.643	0.559	0.651	1.083	0.120	1.270	
P	0.403	0.136	0.208	0.045*	0.709	0.986	0.362	0.257	0.527	0.586	0.531	0.315	0.912	0.425	

t: Student t-test

*: Statistically significant at $p \leq 0.05$

According to PO2 measured by mm hg .there was no significant statistical difference between 2 groups

Tables (16): Comparison between the two studied groups according to PO₂

Cases	Admission	PO ₂ (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Min.	(n = 30)	56.0	65.0	64.0	65.0	50.0	58.0	55.0	64.0	70.0	66.0	67.0	121.0	121.0	120.0	114.0
Max.	(n = 30)	190.0	138.0	114.0	119.0	122.0	142.0	123.0	134.0	122.0	123.0	143.0	134.0	121.0	120.0	114.0
Mean	(n = 30)	96.60	89.73	87.07	88.83	90.77	97.11	97.11	95.82	97.94	102.88	109.0	127.75	121.0	120.0	114.0
SD.	(n = 30)	23.98	18.23	12.59	13.26	16.35	16.71	15.36	16.96	16.05	19.02	28.42	6.24	-	-	-
Median	(n = 30)	90.0	90.0	88.50	88.50	91.50	99.0	99.0	98.0	99.50	103.50	111.0	128.0	121.0	120.0	114.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	(n = 30)	67.0	80.0	75.0	56.0	55.0	65.0	56.0	50.0	60	50	50	50	50	80	80
Max.	(n = 30)	120.0	110.0	120.0	123.0	109.0	124.0	123.0	134.0	118	105	105	105	100	90	90
Mean	(n = 30)	93.93	95.53	92.93	93.87	90.81	95.63	92.47	98.86	92.63	92.29	90.17	88.20	85.00	85.00	-
SD.	(n = 30)	11.05	8.19	9.19	14.53	11.54	14.11	18.57	25.08	19.12	19.24	20.41	22.00	23.80	7.07	-
Median	(n = 30)	97.0	97.50	92.50	96.0	94.0	95.50	98.0	102.0	100	100	96.5	98	95	85	85
T	(n = 30)	0.553	1.589	2.061*	1.402	0.013	0.341	0.900	0.400	0.718	1.070	1.280	3.442*	1.353	4.041	
P	(n = 30)	0.582	0.120	0.044*	0.166	0.990	0.735	0.373	0.692	0.480	0.304	0.233	0.011*	0.269	0.154	

t: Student t-test

*: Statistically significant at $p \leq 0.05$

According to HCO₃ level measured by meq/l. there was no significant statistical difference between 2 groups

Tables (17): Comparison between the two studied groups according to HCO₃

Cases	Admission	HCO ₃ (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Min.	3.0	10.0	12.0	14.0	9.0	10.0	7.0	12.0	9.0	10.0	12.0	18.60	19.80	20.10	21.0
Max.	21.0	21.0	22.0	22.0	23.0	24.0	24.0	25.0	26.0	24.0	24.0	22.0	19.80	20.10	21.0
Mean	16.97	17.93	18.44	18.13	18.17	19.32	19.11	18.89	19.05	19.0	18.82	20.65	19.80	20.10	21.0
SD.	4.16	2.42	1.86	1.87	3.25	2.83	3.67	3.81	4.85	4.41	4.39	1.45	-	-	-
Median	18.0	18.35	18.0	19.0	19.0	20.0	20.0	20.0	20.90	20.0	20.0	21.0	19.80	20.10	21.0
(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	6.0	11.0	11.0	10.0	7.0	10.0	9.0	10.0	10	9	10	10	10	14	
Max.	22.0	21.0	20.0	21.0	23.0	22.0	21.0	22.0	21	21	20	20	20	16	
Mean	18.0	18.17	18.55	17.96	18.44	18.25	17.76	18.86	17.63	17.43	17.33	16.80	15.50	15.00	-
SD.	4.79	2.26	1.71	2.65	3.04	2.97	3.75	4.11	4.50	3.99	3.93	4.15	4.12	1.41	
Median	20.50	19.0	19.0	18.85	19.0	19.0	19.0	20.50	20	19	19	18	16	15	
T	0.892	0.386	0.331	0.247	0.332	1.319	1.175	0.026	0.694	0.719	0.593	1.753	0.933	2.944	
P	0.376	0.701	0.742	0.806	0.741	0.193	0.247	0.979	0.495	0.485	0.568	0.123	0.420	0.208	

t: Student t-test

According to oxygen saturation percentage .there was no significant statistical difference between 2 groups

Tables (18): Comparison between the two studied groups according to o2 saturation.

Cases	Admission	SAT(Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)	(n = 1)	
Min.	80.0	85.0	83.0	70.0	65.0	77.0	67.0	70.0	80.0	70.0	85.0	96.0	98.0	98.0	97.0	97.0
Max.	99.0	99.0	98.0	99.0	99.0	99.0	99.0	99.0	99.0	99.0	98.0	98.0	98.0	98.0	97.0	97.0
Mean	92.37	93.40	92.07	91.20	91.60	93.81	93.19	92.24	92.94	92.50	94.60	97.0	98.0	98.0	97.0	97.0
SD.	4.85	3.07	3.57	5.27	7.02	4.56	6.45	7.48	6.46	9.30	5.41	0.82	.	.	.	.
Median	93.0	94.0	92.0	92.0	94.0	95.0	94.0	95.0	96.0	95.50	97.0	97.0	98.0	98.0	97.0	97.0
	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)	(n = 0)
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)	(n = 0)
Min.	75.0	80.0	84.0	65.0	69.0	78.0	65.0	60.0	72	70	70	70	70	84	84	84
Max.	100.0	97.0	96.0	96.0	97.0	99.0	99.0	98.0	96	95	95	95	95	88	88	88
Mean	90.47	92.60	93.03	91.57	92.30	92.58	89.29	89.93	90.38	90.86	89.67	88.80	87.00	86.00	86.00	86.00
SD.	6.84	4.60	2.89	6.11	5.61	5.32	10.75	11.55	9.64	9.21	9.69	10.57	11.46	2.83	2.83	2.83
Median	93.0	94.0	94.0	93.0	94.0	95.0	95.0	95.0	95	94	93.5	93	91.5	86	86	86
T	1.241	0.793	1.152	0.249	0.411	0.890	1.348	0.671	0.777	0.343	1.009	1.527	0.859	3.175	3.175	3.175
P	0.220	0.431	0.238	0.804	0.683	0.378	0.191	0.507	0.446	0.737	0.339	0.171	0.454	0.194	0.194	0.194

t: Student t-test

According to urine out put measured by ml/hour .there was no significant statistical difference between 2 groups

Tables (19): Comparison between the two studied groups according to urine out put

	UOP (Days)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 18)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Min.	30.0	40.0	10.0	30.0	10.0	25.0	10.0	20.0	10.0	10.0	30.0	100.0	100.0	100.0	100.0
Max.	100.0	100.0	100.0	120.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Mean	71.33	77.33	65.33	70.33	71.0	79.44	80.56	80.0	77.50	78.75	84.0	100.0	100.0	100.0	100.0
SD.	27.51	23.48	22.24	27.35	27.08	25.28	26.83	31.44	33.37	34.82	30.50	0.0	-	-	-
Median	60.0	80.0	60.0	60.0	70.0	100.0	90.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 6)	(n = 5)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	30.0	50.0	40.0	10.0	10.0	20.0	10.0	10.0	10	10	10	10	10	60	
Max.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100	100	100	100	100	70	
Mean	78.67	84.67	88.67	78.67	73.33	84.58	77.06	81.43	78.75	73.33	72.00	70.00	65.00	65.00	-
SD.	27.63	18.71	18.14	27.63	26.46	25.19	37.54	36.97	39.44	33.27	37.01	36.74	38.73	7.07	
Median	100.0	100.0	100.0	100.0	70.0	100.0	100.0	100.0	100	80	80	70	75	65	
Z	1.128	1.312	3.885*	1.258	0.075	0.900	0.627	0.578	0.529	0.763	0.780	1.757	1.088	1.225	
p	0.260	0.190	<0.001*	0.209	0.940	0.368	0.530	0.563	0.597	0.445	0.435	0.079	0.277	0.221	

Z: Z for Mann Whitney test

*: Statistically significant at $p \leq 0.05$

Tables (20): Comparison between the two studied groups according to clinical pulmonary infection score

Cases	Admission	CPIS (Days)															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Min.	(n = 30)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max.	(n = 30)	10.0	11.0	11.0	13.0	15.0	12.0	14.0	15.0	15.0	20.0	11.0	6.0	5.0	5.0	5.0	5.0
Mean	(n = 30)	5.83	5.93	6.97	7.27	7.40	7.0	6.96	7.65	7.44	7.75	6.60	5.25	5.0	5.0	5.0	5.0
SD.	(n = 30)	1.39	1.55	1.77	1.91	2.50	2.06	2.64	2.83	3.48	5.15	2.51	0.50	-	-	-	-
Median	(n = 30)	5.0	5.0	7.0	7.0	7.0	7.0	6.0	7.0	5.50	5.50	6.0	5.0	5.0	5.0	5.0	5.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 11)	(n = 10)	(n = 9)	(n = 5)	(n = 4)	(n = 2)	(n = 0)	(n = 0)
Min.	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0
Max.	10.0	10.0	11.0	13.0	15.0	13.0	17.0	15.0	15.0	15.0	15	15	16	15	13	13	0
Mean	6.27	5.90	5.80	7.0	6.93	6.54	7.76	6.64	6.64	10.0	10.0	10.0	10.0	9.0	10.0	10.0	0
SD.	1.87	1.75	1.61	2.14	2.29	1.98	4.35	3.50	3.50	7.07	7.08	7.14	7.19	7.34	7.40	7.40	0
Median	5.0	5.0	8.0	7.0	7.0	6.0	5.0	5.0	5.0	10.0	10.0	10.6	10.7	10.8	10.9	10.9	0
Z	0.576	0.465	0.830	0.048	0.810	0.885	0.170	2.174*	0.532	0.527	0.532	0.532	0.543	0.533	0.543	0.543	0
p	0.565	0.642	0.406	0.962	0.418	0.376	0.865	0.030*	0.598	0.598	0.654	0.545	0.784	0.543	0.543	0.543	0

Z: Z for Mann Whitney test

*: Statistically significant at $p \leq 0.05$

According to sequential organ failure assessment score measurement .there was no significant statistical difference between 2 groups

Tables (21): Comparison between the two studied groups according to sequential organ failure assessment score

Cases	Admission	SOFA (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Min.	(n = 30) 9.0	(n = 30) 6.0	(n = 30) 7.0	(n = 30) 7.0	(n = 30) 8.0	(n = 30) 10.0	(n = 27) 8.0	(n = 27) 8.0	(n = 17) 6.0	(n = 16) 5.0	(n = 8) 7.0	(n = 5) 7.0	(n = 4) 6.0	(n = 1) 10.0	(n = 1) 9.0	(n = 1) 8.0
Max.	(n = 30) 18.0	(n = 30) 18.0	(n = 30) 17.0	(n = 30) 18.0	(n = 30) 21.0	(n = 27) 19.0	(n = 27) 21.0	(n = 17) 21.0	(n = 16) 21.0	(n = 8) 22.0	(n = 5) 16.0	(n = 4) 14.0	(n = 1) 10.0	(n = 1) 10.0	(n = 1) 9.0	(n = 1) 8.0
Mean	(n = 30) 11.40	(n = 30) 11.17	(n = 30) 12.13	(n = 30) 12.47	(n = 30) 12.80	(n = 27) 12.15	(n = 27) 12.15	(n = 17) 13.06	(n = 16) 12.69	(n = 8) 12.13	(n = 5) 11.60	(n = 4) 9.25	(n = 1) 10.0	(n = 1) 9.0	(n = 1) 9.0	(n = 1) 8.0
SD.	(n = 30) 2.50	(n = 30) 2.42	(n = 30) 2.36	(n = 30) 2.37	(n = 30) 3.13	(n = 27) 3.10	(n = 27) 3.52	(n = 17) 3.93	(n = 16) 4.95	(n = 8) 5.30	(n = 5) 4.34	(n = 4) 3.95	(n = 1) -	(n = 1) -	(n = 1) -	(n = 1) -
Median	(n = 30) 10.0	(n = 30) 10.0	(n = 30) 12.0	(n = 30) 12.0	(n = 30) 12.0	(n = 27) 11.0	(n = 27) 11.0	(n = 17) 12.0	(n = 16) 10.50	(n = 8) 10.50	(n = 5) 13.0	(n = 4) 8.50	(n = 1) 10.0	(n = 1) 9.0	(n = 1) 9.0	(n = 1) 8.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 2)	(n = 0)
Min.	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9	9	8	8	8	7	7	
Max.	15.0	15.0	16.0	23.0	24.0	18.0	23.0	23.0	21	18	17	16	14	8	8	
Mean	11.20	11.10	11.73	12.93	12.26	11.33	12.82	11.64	12.50	10.86	10.50	10.00	9.75	7.50	7.50	-
SD.	1.94	1.90	1.74	3.23	3.16	2.39	5.45	4.94	4.99	3.24	3.39	3.39	2.87	0.71	0.71	
Median	10.0	10.0	12.0	13.0	12.0	10.0	10.0	9.50	10	10	9.5	9	8.5	7.5	7.5	
T	0.735	0.163	0.747	0.638	0.648	1.042	0.455	0.890	0.087	0.548	0.473	0.307	0.078	1.732	1.732	
P	0.465	0.871	0.458	0.526	0.520	0.303	0.653	0.381	0.931	0.593	0.647	0.768	0.943	0.333	0.333	

t: Student t-test

*: Statistically significant at $p \leq 0.05$

According to hemoglobin level measured by g/dl. there was no significant statistical difference between 2 groups

Tables (22): Comparison between the two studied groups according to hemoglobin level measured by g/dl.

Cases	Admission	HB (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Min.	(n = 30) 7.90	(n = 30) 8.0	(n = 30) 7.60	(n = 30) 7.0	(n = 30) 6.0	(n = 27) 7.0	(n = 27) 6.0	(n = 17) 5.80	(n = 16) 5.0	(n = 8) 7.0	(n = 5) 6.0	(n = 4) 9.60	(n = 1) 9.70	(n = 1) 9.90	(n = 1) 10.0
Max.	(n = 30) 11.0	(n = 30) 11.0	(n = 30) 10.20	(n = 30) 11.0	(n = 30) 12.0	(n = 27) 12.0	(n = 27) 12.0	(n = 17) 11.0	(n = 16) 11.0	(n = 8) 10.0	(n = 5) 10.0	(n = 4) 11.0	(n = 1) 9.70	(n = 1) 9.90	(n = 1) 10.0
Mean	(n = 30) 9.32	(n = 30) 9.23	(n = 30) 9.09	(n = 30) 9.02	(n = 30) 9.19	(n = 27) 9.49	(n = 27) 9.41	(n = 17) 9.01	(n = 16) 9.11	(n = 8) 9.26	(n = 5) 9.16	(n = 4) 10.20	(n = 1) 9.70	(n = 1) 9.90	(n = 1) 10.0
SD.	(n = 30) 0.87	(n = 30) 0.73	(n = 30) 0.74	(n = 30) 0.83	(n = 30) 1.18	(n = 27) 1.11	(n = 27) 1.21	(n = 17) 1.48	(n = 16) 1.71	(n = 8) 1.11	(n = 5) 1.77	(n = 4) 0.58	(n = 1) -	(n = 1) -	(n = 1) -
Median	(n = 30) 9.0	(n = 30) 9.0	(n = 30) 9.0	(n = 30) 9.0	(n = 30) 9.0	(n = 27) 9.70	(n = 27) 9.80	(n = 17) 9.50	(n = 16) 9.75	(n = 8) 9.75	(n = 5) 10.0	(n = 4) 10.10	(n = 1) 9.70	(n = 1) 9.90	(n = 1) 10.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	8.0	8.0	7.0	6.0	7.0	8.0	6.0	6.0	8	6	6	6	6	8.5	
Max.	10.0	11.0	11.0	11.0	11.0	11.0	10.0	11.0	10.3	10	10	10	9.8	9	
Mean	8.91	9.22	9.52	9.40	9.60	9.95	9.03	9.52	9.64	9.36	9.17	8.92	8.45	8.75	
SD.	0.64	0.67	0.79	0.99	0.92	0.76	1.54	1.36	0.76	1.49	1.56	1.68	1.68	0.35	
Median	9.0	9.0	9.55	9.55	10.0	10.0	10.0	10.0	10	10	9.75	9.8	9	8.75	
T	2.052*	0.074	2.183*	1.600	1.448	1.746	0.915	1.004	0.829	0.141	0.007	1.441	0.667	2.656	
P	0.045*	0.941	0.033*	0.115	0.153	0.087	0.366	0.324	0.416	0.890	0.995	0.193	0.553	0.229	

t: Student t-test

*: Statistically significant at $p \leq 0.05$

According to white blood cell count .there was no significant statistical difference between 2 groups

Tables (23): Comparison between the two studied groups according to white blood cell count.

	Admission	WBC (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Min.	10.0	10.0	11.0	11.0	10.0	10.0	10.0	10.0	9.0	10.0	10.50	9.0	13.0	10.0	10.0
Max.	20.0	31.0	28.0	33.0	44.0	29.0	33.0	32.0	41.0	34.0	22.0	16.0	13.0	10.0	10.0
Mean	13.93	14.73	16.23	17.23	17.05	15.11	15.52	16.88	17.09	15.88	14.70	11.50	13.0	10.0	10.0
SD.	2.80	4.10	4.65	5.94	7.37	5.33	7.06	8.08	10.65	8.06	5.07	3.11	-	-	-
Median	13.0	13.50	15.50	14.50	15.50	13.0	12.0	12.0	12.50	12.0	12.0	10.50	13.0	10.0	10.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	6.0	10.0	9.0	9.0	9.0	8.0	10.0	9.0	8	10	10	8	8	8	8
Max.	24.0	18.0	23.0	36.0	34.0	22.0	39.0	39.0	30	30	28	24	22	10	10
Mean	12.93	12.17	13.40	15.26	14.85	13.04	15.89	14.64	14.28	13.31	13.33	12.40	12.50	9.00	-
SD.	3.54	1.78	3.32	5.99	5.27	4.28	9.29	9.24	8.35	7.38	7.20	6.54	6.40	1.41	-
Median	12.0	11.0	12.0	13.0	13.0	12.0	11.0	11.0	11	11	10.5	10	10	9	-
Z	1.568	3.175*	2.669*	1.940	1.212	1.713	0.465	1.747	1.045	1.475	1.302	0.384	0.725	0.707	-
p	0.117	0.001*	0.008*	0.052	0.225	0.087	0.642	0.081	0.296	0.140	0.193	0.701	0.468	0.480	-

Z: Z for Mann Whitney test

*: Statistically significant at $p \leq 0.05$

According to platelet count .there was no significant statistical difference between 2 groups

Tables (24): Comparison between the two studied groups according to platelet count.

Cases	Admission	PLT (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)	
Min.	90.0	87.0	99.0	80.0	63.0	39.0	45.0	40.0	30.0	21.0	30.0	200.0	240.0	243.0	250.0	
Max.	544.0	479.0	486.0	500.0	543.0	432.0	450.0	455.0	321.0	291.0	250.0	220.0	240.0	243.0	250.0	
Mean	261.20	235.37	233.70	219.17	211.0	196.23	199.22	196.78	175.76	175.44	169.25	207.25	240.0	243.0	250.0	
SD.	116.61	93.68	80.52	86.68	95.78	87.79	83.61	91.25	74.83	76.82	74.17	9.50	-	-	-	
Median	235.0	244.50	237.0	210.0	199.50	199.0	190.0	190.0	180.0	195.0	192.0	204.50	240.0	243.0	250.0	
Control	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)				
Min.	115.0	100.0	117.0	60.0	24.0	40.0	90.0	54.0	40.0	56	56	56	56	56	160	
Max.	470.0	400.0	420.0	400.0	390.0	432.0	354.0	400.0	400.0	345	320	300	300	270	200	
Mean	280.30	274.20	297.37	292.97	261.07	276.96	269.42	254.94	261.79	252.38	252.29	229.33	211.20	196.50	180.00	-
SD.	98.25	80.16	67.53	85.55	77.93	85.35	70.54	101.76	113.01	111.37	91.38	93.35	93.95	98.64	28.28	
Median	269.50	285.0	300.0	311.0	288.50	291.0	298.0	280.0	304.0	301.5	300	260	240	230	180	
Z	0.843	1.783	3.406*	3.720*	3.143*	3.607*	3.333*	2.061*	2.720*	2.144*	2.267*	1.464	0.747	0.0	1.225	
p	0.399	0.075	0.001*	<0.001*	0.002*	<0.001*	0.001*	0.039*	0.007*	0.032*	0.023*	0.143	0.455	1.000	0.221	

Z: Z for Mann Whitney test

*: Statistically significant at $p \leq 0.05$

According to urea level measured by mg/dl .there was no significant statistical difference between 2 groups

Tables (25): Comparison between the two studied groups according to urea level measured by mg/dl.

Cases	Admission	Urea (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Min.	(n = 30) 23.0	(n = 30) 24.0	(n = 30) 23.0	(n = 30) 30.0	(n = 30) 31.0	(n = 30) 32.0	(n = 27) 33.0	(n = 27) 40.0	(n = 17) 39.0	(n = 16) 33.0	(n = 8) 33.0	(n = 5) 34.0	(n = 4) 33.0	(n = 1) 90.0	(n = 1) 88.0	(n = 1) 60.0
Max.	(n = 30) 153.0	(n = 30) 152.0	(n = 30) 113.0	(n = 30) 123.0	(n = 30) 167.0	(n = 30) 200.0	(n = 27) 187.0	(n = 27) 275.0	(n = 17) 321.0	(n = 16) 411.0	(n = 8) 223.0	(n = 5) 221.0	(n = 4) 90.0	(n = 1) 90.0	(n = 1) 88.0	(n = 1) 60.0
Mean	(n = 30) 74.30	(n = 30) 73.97	(n = 30) 68.33	(n = 30) 70.50	(n = 30) 77.23	(n = 30) 79.90	(n = 27) 73.78	(n = 27) 81.37	(n = 17) 89.47	(n = 16) 96.31	(n = 8) 90.88	(n = 5) 95.0	(n = 4) 58.50	(n = 1) 90.0	(n = 1) 88.0	(n = 1) 60.0
SD.	(n = 30) 30.87	(n = 30) 30.66	(n = 30) 24.32	(n = 30) 23.30	(n = 30) 33.72	(n = 30) 38.08	(n = 27) 37.25	(n = 27) 56.83	(n = 17) 65.91	(n = 16) 92.98	(n = 8) 64.70	(n = 5) 74.30	(n = 4) 23.53	(n = 1) -	(n = 1) -	(n = 1) -
Median	(n = 30) 77.50	(n = 30) 70.0	(n = 30) 67.0	(n = 30) 65.50	(n = 30) 70.0	(n = 30) 70.0	(n = 27) 66.0	(n = 27) 67.0	(n = 17) 67.0	(n = 14) 62.50	(n = 8) 68.50	(n = 6) 70.0	(n = 5) 55.50	(n = 4) 90.0	(n = 2) 88.0	(n = 0) 60.0
Control	(n = 30) 24.0	(n = 30) 30.0	(n = 30) 36.0	(n = 30) 37.0	(n = 30) 43.0	(n = 27) 35.0	(n = 24) 34.0	(n = 17) 43.0	(n = 14) 34.0	(n = 8) 34	(n = 7) 34	(n = 6) 34	(n = 5) 34	(n = 4) 30	(n = 2) 30	(n = 0) -
Min.	(n = 30) 182.0	(n = 30) 149.0	(n = 30) 128.0	(n = 30) 187.0	(n = 30) 234.0	(n = 27) 229.0	(n = 24) 190.0	(n = 17) 278.0	(n = 14) 231.0	(n = 8) 244	(n = 7) 140	(n = 6) 130	(n = 5) 120	(n = 4) 118	(n = 2) 38	(n = 0) -
Max.	(n = 30) 81.87	(n = 30) 71.53	(n = 30) 66.80	(n = 30) 74.57	(n = 30) 77.30	(n = 27) 68.81	(n = 24) 68.88	(n = 17) 95.94	(n = 14) 78.86	(n = 8) 87.00	(n = 7) 60.71	(n = 6) 56.67	(n = 5) 56.40	(n = 4) 56.50	(n = 2) 34.00	(n = 0) -
Mean	(n = 30) 30.94	(n = 30) 24.52	(n = 30) 19.03	(n = 30) 28.74	(n = 30) 41.49	(n = 27) 39.35	(n = 24) 40.65	(n = 17) 71.32	(n = 14) 63.59	(n = 8) 73.88	(n = 7) 37.29	(n = 6) 36.63	(n = 5) 36.14	(n = 4) 41.35	(n = 2) 5.66	(n = 0) -
SD.	(n = 30) 76.0	(n = 30) 71.50	(n = 30) 65.0	(n = 30) 69.50	(n = 30) 66.50	(n = 27) 60.0	(n = 24) 54.50	(n = 17) 64.0	(n = 14) 46.50	(n = 8) 54	(n = 7) 43	(n = 6) 41.5	(n = 5) 43	(n = 4) 39	(n = 2) 34	(n = 0) -
Z	0.658	0.229	0.518	0.288	0.237	1.727	1.265	0.422	1.489	0.613	1.043	1.006	0.490	0.707	1.225	
p	0.510	0.819	0.604	0.773	0.813	0.084	0.206	0.673	0.136	0.540	0.297	0.314	0.624	0.480	0.221	

Z: Z for Mann Whitney test

*: Statistically significant at $p \leq 0.05$

According to creatinine level measured by mg/dl .there was no significant statistical difference between 2 groups

Tables (26): Comparison between the two studied groups according to creatinine level measured by mg/dl.

Cases	Admission	Cr (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Min.	(n = 30) 0.50	(n = 30) 0.70	(n = 30) 0.70	(n = 30) 0.70	(n = 30) 0.70	(n = 27) 0.80	(n = 27) 0.60	(n = 17) 0.70	(n = 16) 0.70	(n = 8) 0.80	(n = 5) 0.70	(n = 4) 0.70	(n = 1) 1.0	(n = 1) 0.80	(n = 1) 0.90
Max.	(n = 30) 2.50	(n = 30) 1.90	(n = 30) 1.88	(n = 30) 2.70	(n = 30) 3.40	(n = 27) 2.97	(n = 27) 3.30	(n = 17) 3.50	(n = 16) 4.10	(n = 8) 3.20	(n = 5) 2.90	(n = 4) 1.0	(n = 1) 1.0	(n = 1) 0.80	(n = 1) 0.90
Mean	(n = 30) 1.23	(n = 30) 1.16	(n = 30) 1.22	(n = 30) 1.20	(n = 30) 1.31	(n = 27) 1.20	(n = 27) 1.31	(n = 17) 1.34	(n = 16) 1.43	(n = 8) 1.33	(n = 5) 1.22	(n = 4) 0.83	(n = 1) 1.0	(n = 1) 0.80	(n = 1) 0.90
SD.	(n = 30) 0.52	(n = 30) 0.35	(n = 30) 0.32	(n = 30) 0.43	(n = 30) 0.54	(n = 27) 0.44	(n = 27) 0.62	(n = 17) 0.71	(n = 16) 0.90	(n = 8) 0.87	(n = 5) 0.94	(n = 4) 0.13	(n = 1) -	(n = 1) -	(n = 1) -
Median	(n = 30) 1.10	(n = 30) 1.05	(n = 30) 1.10	(n = 30) 1.10	(n = 30) 1.20	(n = 27) 1.10	(n = 27) 1.10	(n = 17) 1.0	(n = 16) 1.05	(n = 8) 0.90	(n = 5) 0.80	(n = 4) 0.80	(n = 1) 1.0	(n = 1) 0.80	(n = 1) 0.90
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	0.60	0.80	0.70	0.80	0.80	0.70	0.80	0.70	0.7	0.7	0.7	0.7	0.7	0.7	
Max.	2.40	2.0	2.10	3.50	3.0	2.30	3.80	3.90	3.7	2.4	2.2	2	1.6	0.8	
Mean	1.21	1.15	1.09	1.19	1.13	1.08	1.51	1.35	1.44	1.07	1.02	1.00	0.95	0.75	-
SD.	0.44	0.26	0.25	0.56	0.46	0.38	0.98	0.98	1.08	0.60	0.58	0.56	0.44	0.07	
Median	1.0	1.10	1.0	1.0	1.0	1.0	1.0	0.91	0.94	0.8	0.8	0.8	0.75	0.75	
Z	0.210	0.339	1.530	0.439	2.343*	1.719	0.273	0.821	0.769	0.778	0.499	0.261	0.725	0.707	
p	0.834	0.735	0.126	0.661	0.019*	0.086	0.785	0.412	0.442	0.437	0.618	0.794	0.468	0.480	

Z: Z for Mann Whitney test

*: Statistically significant at $p \leq 0.05$

According to serum glutamic oxaloacetic transferase acid level measured by IU/dl .there was a significant statistical difference between 2 groups as elevated liver enzymes levels in simvastatin group of patients

Tables (27): Comparison between the two studied groups according to serum glutamic oxaloacetic acid transferase (SGOT-)

	Admission	SGOT (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 27)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)				
Min.	11	12	13	10	22	88	100	110	122	132	111	100	98	90	87	76
Max.	154	150	86	53	90	99	109	123	152	145	146	123	112	90	87	76
Mean	30.20	30.43	28.50	28.83	63.63	95.70	105.96	114.22	126.76	136.63	128.50	108.60	102.50	90.00	87.00	76.00
SD.	24.13	23.39	12.09	8.42	17.98	3.34	3.65	3.93	7.23	4.41	12.17	9.58	6.40	.	.	.
Median	27	26	28	30	67	97	108	113	124	134.5	123	108	100	90	87	76
Control	(n = 30)	(n = 27)	(n = 24)	(n = 24)	(n = 20)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)				
Min.	23	25	23	23	29	30	30	30	29	34	34	50	45	40	45	-
Max.	54	57	49	54	66	76	47	64	56	67	87	70	60	55	50	-
Mean	34.40	36.37	37.20	40.03	39.20	39.11	38.92	40.58	39.85	52.63	61.43	60.00	54.00	49.50	47.50	-
SD.	8.01	7.09	7.29	6.14	7.94	8.73	5.05	7.50	6.59	11.54	17.03	8.37	6.52	6.66	3.54	-
Median	34	35	35	40.5	38.5	38	38.5	40	41.5	55.5	67	62.5	55	51.5	47.5	-
t	0.905	1.329	3.376*	5.883*	6.807*	32.952*	54.775*	44.636*	38.239*	19.879*	8.869*	8.991*	11.175*	5.440*	9.122	
p	0.369	0.189	0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	0.012*	0.070	

t: Student t-test

*: Statistically significant at p > 0.05

According to serum glutamic pyruvic acid transferase level measured by u/dl .there was significant statistical difference between 2 groups as elevated liver enzymes in simvastatin group of patients

Tables (28): Comparison between the two studied groups according to serum pyruvic acid transferase SGPT

	Admission	SGPT (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)					
Min.	13	15	18	29	47	100	110	122	123	122	100	90	99	85	79	
Max.	122	130	75	98	99	110	120	145	157	150	112	108	99	85	79	
Mean	35.20	34.37	32.70	70.13	93.47	106.63	115.48	131.06	138.50	132.88	107.80	99.75	99.00	85.00	79.00	
SD.	17.71	19.11	10.07	18.59	9.36	3.22	3.49	7.14	10.89	12.19	4.71	7.50	.	.	.	
Median	32.5	31	29.5	69.5	96	108	117	131	139	128.5	108	100.5	99	85	79	
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 24)	(n = 20)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)	
Min.	19	29	20	23	28	32	29	23	29	45	45	45	45	50	-	
Max.	45	60	53	75	67	57	66	50	67	67	67	65	65	55	-	
Mean	31.43	39.13	38.53	39.67	39.78	40.54	42.71	38.35	50.38	59.86	57.83	55.40	55.50	52.50	-	
SD.	7.71	6.85	6.15	9.84	9.51	5.50	10.06	6.71	12.93	8.40	8.01	8.26	9.54	3.54	-	
Median	30.5	38.5	38.5	38.5	38	40	40	38.5	55.5	65	57.5	55	56	52.5	-	
t	1.068	1.286	2.708*	7.935*	21.464*	53.049*	33.674*	40.667*	17.581*	13.296*	12.231*	8.321*	4.079*	7.506		
p	0.290	0.204	0.009*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	<0.001*	0.027*	0.084		

t: Student t-test

*: Statistically significant at p > 0.05

According to total bilirubin level measured by mg/dl .there was no significant statistical difference between 2 groups

Tables (29): Comparison between the two studied groups according to total bilirubin level.

Cases	Admission	Bilirubin total (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Min.	0.70	0.90	1.0	1.0	1.0	1.0	1.0	0.90	1.0	1.0	1.0	1.0	1.20	1.10	1.20
Max.	2.0	1.80	1.40	1.30	1.40	1.30	1.50	1.50	1.60	1.50	1.20	1.10	1.20	1.10	1.20
Mean	0.99	1.04	1.06	1.12	1.09	1.09	1.10	1.13	1.18	1.15	1.08	1.03	1.20	1.10	1.20
SD.	0.24	0.16	0.09	0.08	0.10	0.09	0.12	0.16	0.18	0.19	0.11	0.05	-	-	-
Median	1.0	1.0	1.0	1.10	1.10	1.10	1.10	1.10	1.10	1.05	1.0	1.0	1.20	1.10	1.20
	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	0.70	0.90	1.0	1.0	1.0	1.0	1.0	1.0	1	0.9	0.9	0.9	0.9	0.9	-
Max.	1.30	1.30	1.60	1.80	1.90	1.70	1.90	1.70	1.8	1.6	1.4	1.2	1	0.9	-
Mean	1.0	1.12	1.15	1.20	1.17	1.18	1.25	1.18	1.18	1.06	1.03	1.00	0.95	0.90	-
SD.	0.13	0.11	0.15	0.18	0.20	0.18	0.30	0.24	0.33	0.24	0.19	0.12	0.06	0.00	-
Median	1.0	1.10	1.10	1.20	1.14	1.20	1.10	1.10	1	1	1	1	0.95	0.9	-
t	0.232	2.026*	1.078	2.362*	2.040*	2.203*	1.968	0.681	0.0	0.823	0.491	0.380	3.873*	-	-
p	0.817	0.047*	0.285	0.023*	0.048*	0.035*	0.064*	0.501	1.000	0.425	0.635	0.716	0.030*	-	-

t: Student t-test

*: Statistically significant at $p \leq 0.05$

According to direct bilirubin level measured by mg/dl .there was no significant statistical difference between 2 groups

Tables (30): Comparison between the two studied groups according to direct bilirubin level.

Cases	Admission	Bilirubin direct (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Min.	0.25	0.20	0.20	0.20	0.30	0.30	0.30	0.30	0.30	0.80	0.70	0.80	0.80	1.0	0.90	1.10
Max.	1.80	1.60	1.25	1.20	1.30	1.10	1.30	1.30	1.30	1.50	1.40	1.0	1.0	1.0	0.90	1.10
Mean	0.79	0.87	0.89	0.93	0.92	0.89	0.92	0.94	0.94	1.0	0.99	0.92	0.90	1.0	0.90	1.10
SD.	0.26	0.19	0.17	0.17	0.17	0.16	0.17	0.22	0.22	0.20	0.23	0.08	0.08	-	-	-
Median	0.80	0.90	0.90	0.99	0.90	0.90	0.90	1.0	1.0	1.0	0.90	0.90	0.90	1.0	0.90	1.10
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	0.60	0.70	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.8	0.8	0.8	0.8	0.7	0.7	
Max.	1.10	1.0	1.40	1.60	1.70	1.50	1.80	1.50	1.50	1.6	1.3	1.1	1	0.9	0.8	
Mean	0.86	0.90	0.97	1.03	0.99	1.01	1.09	1.02	1.02	1.01	0.90	0.87	0.86	0.80	0.75	-
SD.	0.12	0.11	0.13	0.19	0.19	0.16	0.32	0.23	0.23	0.31	0.18	0.12	0.09	0.08	0.07	
Median	0.88	0.90	1.0	1.0	1.0	1.0	1.0	0.95	0.95	0.9	0.8	0.8	0.8	0.8	0.75	
T	1.390	2.391*	0.915	2.233*	1.497	2.778*	2.011	1.003	1.003	0.121	0.808	0.830	0.692	2.191	1.732	
P	0.170	0.020*	0.364	0.029*	0.140	0.008*	0.057	0.324	0.324	0.905	0.433	0.428	0.511	0.116	0.333	

t: Student t-test

*: Statistically significant at $p \leq 0.05$

According to c reactive protein level measured by mg/dl .there was no significant statistical difference between 2 groups

Tables (31): Comparison between the two studied groups according to C reactive protein .

Cases	Admission	CRP (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Min.	(n = 30) 23.0	(n = 30) 40.0	(n = 30) 35.0	(n = 30) 49.0	(n = 30) 44.0	(n = 27) 29.0	(n = 27) 33.0	(n = 17) 48.0	(n = 16) 45.0	(n = 8) 65.0	(n = 5) 55.0	(n = 4) 43.0	(n = 1) 5.0	(n = 1) 75.0	(n = 1) 63.0
Max.	(n = 30) 434.0	(n = 30) 321.0	(n = 30) 324.0	(n = 30) 400.0	(n = 30) 567.0	(n = 27) 372.0	(n = 27) 400.0	(n = 17) 453.0	(n = 16) 564.0	(n = 8) 498.0	(n = 5) 245.0	(n = 4) 86.0	(n = 1) 5.0	(n = 1) 75.0	(n = 1) 63.0
Mean	(n = 30) 111.83	(n = 30) 84.80	(n = 30) 156.10	(n = 30) 174.63	(n = 30) 184.30	(n = 27) 142.33	(n = 27) 138.56	(n = 17) 170.53	(n = 16) 167.63	(n = 8) 153.0	(n = 5) 112.20	(n = 4) 67.25	(n = 1) 5.0	(n = 1) 75.0	(n = 1) 63.0
SD.	(n = 30) 85.04	(n = 30) 77.35	(n = 30) 93.0	(n = 30) 87.68	(n = 30) 122.51	(n = 27) 86.73	(n = 27) 95.19	(n = 17) 129.51	(n = 16) 163.07	(n = 8) 145.03	(n = 5) 75.80	(n = 4) 19.62	(n = 1) -	(n = 1) -	(n = 1) -
Median	(n = 30) 98.0	(n = 30) 75.0	(n = 30) 116.50	(n = 30) 175.50	(n = 30) 180.0	(n = 27) 121.0	(n = 27) 116.0	(n = 17) 100.0	(n = 16) 94.50	(n = 8) 98.0	(n = 5) 89.0	(n = 4) 70.0	(n = 1) 5.0	(n = 1) 75.0	(n = 1) 63.0
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Min.	69.0	12.0	30.0	36.0	45.0	43.0	54.0	44.0	53	53	53	53	53	50	
Max.	234.0	201.0	389.0	434.0	543.0	451.0	483.0	421.0	400	380	320	280	260	53	
Mean	96.30	69.53	105.73	147.27	135.11	136.54	163.53	127.07	128.13	108.43	104.83	107.00	108.00	51.50	-
SD.	28.54	51.63	78.38	98.90	99.80	110.46	148.14	134.16	126.47	120.29	105.95	97.34	101.48	2.12	
Median	90.50	57.0	86.0	114.50	103.0	94.50	79.0	68.50	67.5	65	61	68	59.5	51.5	
Z	0.577	2.100*	2.366*	1.435	1.782	0.680	0.072	1.946	1.348	1.913	1.281	0.123	1.414	1.225	
P	0.564	0.036*	0.018*	0.151	0.075	0.497	0.942	0.052	0.178	0.056	0.200	0.902	0.157	0.221	

Z: Z for Mann Whitney test

*: Statistically significant at $p \leq 0.05$

According to hypoxic index .there was no significant statistical difference between 2 groups

Tables (32): Comparison between the two studied groups according to hypoxic index .

No. (%)	Admission	HI (Days)													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
<100	-	-	1 (3.3)	1 (3.3)	2 (6.7)	0(0.0)	1 (3.7)	1 (5.9)	3(18.8)	1(12.5)	1(20.0)	-	-	-	-
<200	9 (30.0)	5(16.7)	10 (33.3)	6 (20.0)	2 (6.7)	3 (11.1)	4 (14.8)	3 (17.9)	-	-	-	-	-	-	-
200	-	2(6.7)	1 (3.3)	7 (23.3)	2 (6.7)	2(7.4)	1 (3.7)	-	-	-	-	-	-	-	-
>200	17(56.7)	19(63.3)	14 (46.7)	13 (43.3)	12 (40.0)	9 (33.3)	6 (22.2)	2(11.8)	1(6.3)	1(12.5)	-	-	-	-	-
>300	4(13.3)	3(10.0)	4 (13.3)	3 (10.0)	12 (40.0)	13 (48.1)	15 (55.6)	11(64.7)	11(68.8)	4(50.0)	2(40.0)	1(25.0)	-	-	-
>400	-	1(3.3)	-	-	-	-	-	-	1(6.3)	2(25.0)	2(40.0)	3(75.0)	1(100.0)	1(100.0)	1(100.0)
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
<100	-	-	0(0.0)	1(3.3)	1 (3.7)	1 (4.2)	4 (23.5)	2(14.3)	2(25.0)	1(14.3)	1(16.7)	1(20.0)	2(50.0)	2(100.0)	-
<200	5(16.7)	5 (16.7)	4 (13.3)	3(10.0)	4 (14.8)	4 (16.7)	1 (5.9)	1(7.1)	-	-	3(50.0)	3(60.0)	2(50.0)	0(0.0)	-
200	-	0(0.0)	0(0.0)	5 (16.7)	1 (3.7)	0(0.0)	0(0.0)	-	-	4(57.1)	1(16.7)	1(20.0)	0(0.0)	0(0.0)	-
>200	25(83.3)	25 (83.3)	26 (86.7)	21 (70.0)	20 (74.1)	16 (66.7)	10 (58.8)	3(21.4)	6 (75.0)	2(28.6)	1(16.7)	0(0.0)	0(0.0)	0(0.0)	-
>300	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1 (3.7)	3 (12.5)	2 (11.8)	8(57.1)	-	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-
>400	-	0 (0.0)	-	-	-	-	-	-	-	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	-

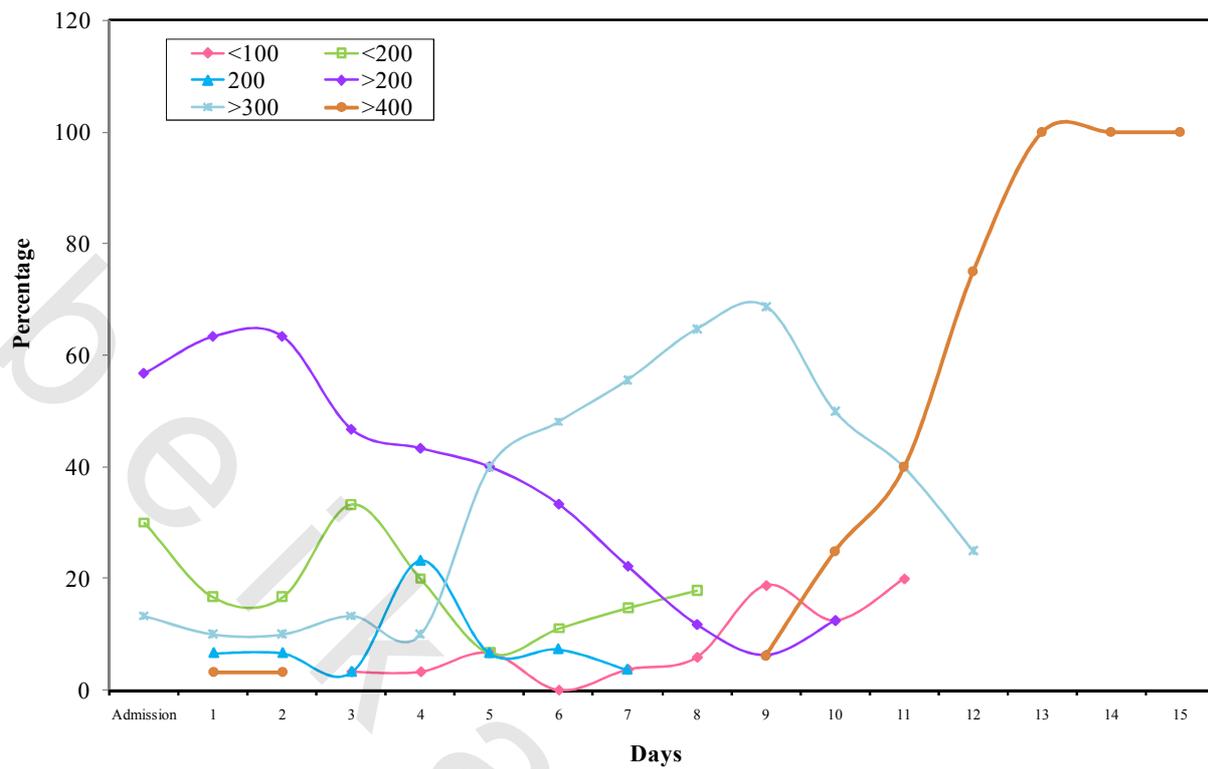


Figure (16): HI in cases group

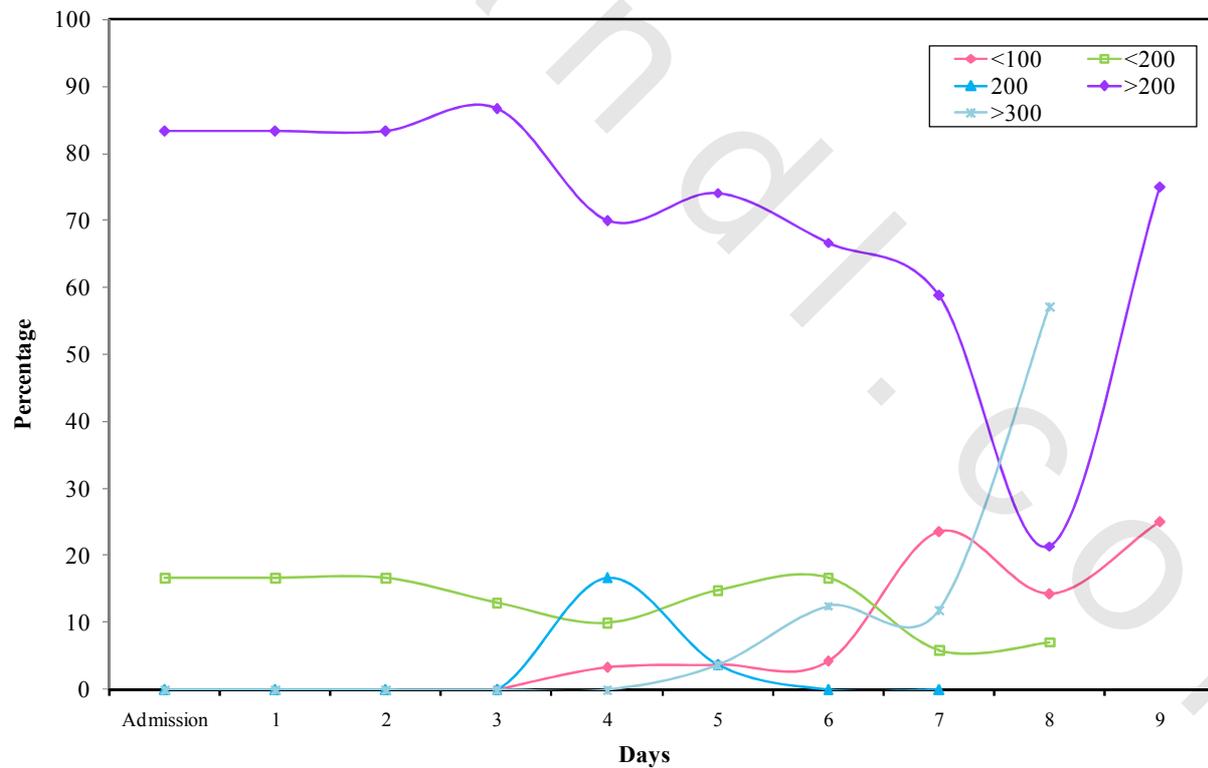


Figure (17): HI in control group

According to mechanical ventilation days .there was no significant statistical difference between 2 groups

Tables (33): Comparison between the two studied groups according to mechanical ventilation days.

No. (%)	Admission	MV (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)					
No	7(23.3)	10 (33.3)	8(26.7)	8(26.7)	7(23.3)	5(18.5)	10(37.0)	2(11.1)	1(6.3)	2(25.0)	1(20.0)	-	-	-	-	
Yes	23(76.7)	20(66.7)	19(63.3)	22(73.3)	14(46.7)	14(51.9)	10(37.0)	4(22.2)	6(37.5)	-	-	-	-	-	-	
Increase dose	-	-	3(10.0)	-	-	-	-	-	-	-	-	-	-	-	-	
maximal dose	-	-	-	-	2(6.7)	-	1(3.7)	3(16.7)	-	1(12.5)	1(20.0)	-	-	-	-	
Weaned	-	-	-	-	6(20.0)	-	3(11.1)	1(5.6)	-	1(12.5)	1(20.0)	1(25.0)	-	-	-	
Added	-	-	-	-	-	-	-	-	-	1(12.5)	-	-	-	-	-	
Removed	-	-	-	-	1(3.3)	-	-	-	-	-	-	-	-	-	-	
Off	-	-	-	-	-	8(29.6)	3(11.1)	8(44.4)	9(56.3)	3(37.5)	2(40.0)	3(75.0)	1(100.0)	1(100.0)	1(100.0)	
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 1)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)	
No	12(40)	13(43.3)	12(40)	13(43.3)	15(55.6)	2(8.3)	2(11.8)	-	-	-	-	-	-	-	-	
Yes	18 (60.0)	17(56.7)	18 (60.0)	17(56.7)	12(44.4)	15(62.5)	3(17.6)	1(100.0)	8(100.0)	7(100.0)	6(100.0)	5(100.0)	4(100.0)	2(100.0)	-	
Increase dose	-	-	-	-	-	-	10(58.8)	-	-	-	-	-	-	-	-	
maximal dose	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Weaned	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Added	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Removed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Off	-	-	-	-	-	7(29.2)	-	-	-	-	-	-	-	-	-	

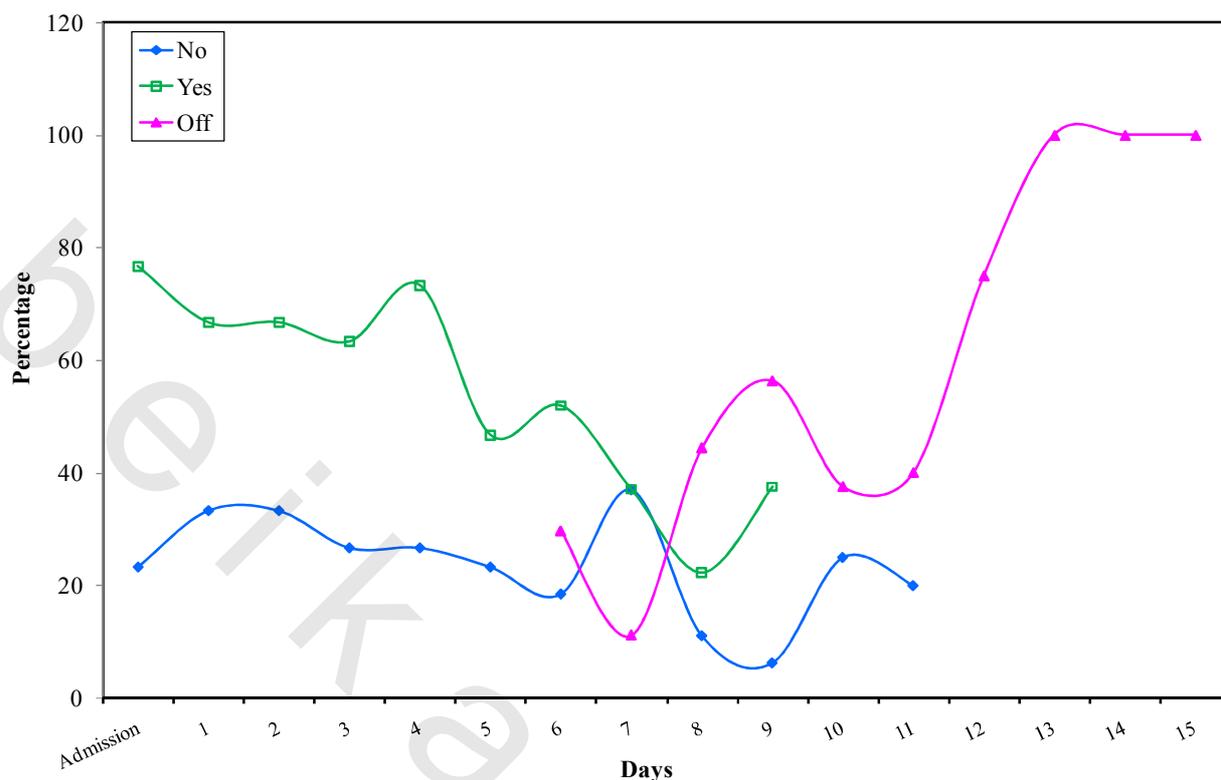


Figure (18): Comparison between the two studied groups according to MV in cases

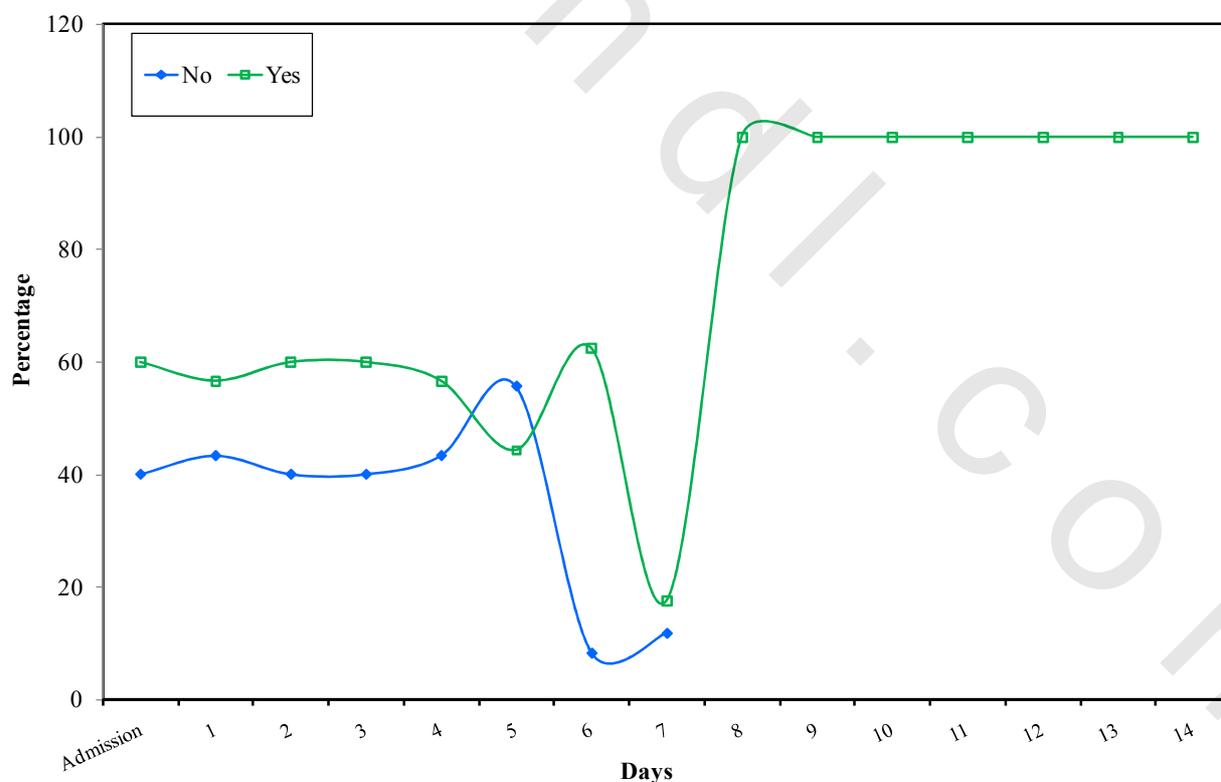


Figure (19): Comparison between the two studied groups according to MV in control

According to vasopressor days number .there was no significant statistical difference between 2 groups

Tables (34): Comparison between the two studied groups according to vasopressors days

No. (%)	Admission	Vasopressors (Days)														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 27)	(n = 27)	(n = 17)	(n = 16)	(n = 8)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
No	-	2(6.7)	2(6.7)	-	-	-	4(14.8)	-	-	-	-	-	-	-	-	-
Yes	30(100.0)	28(93.3)	25(83.3)	29(96.7)	24(80.0)	18(66.7)	16(59.3)	7(38.9)	7(43.8)	2(25.0)	1(20.0)	1(25.0)	-	-	-	-
Increase	-	-	3(10.0)	1(3.3)	-	-	-	-	-	-	-	-	-	-	-	-
Decrease	-	-	-	-	2(6.7)	2(7.4)	-	1(5.6)	-	-	-	-	-	-	-	-
maximal dose	-	-	-	-	2(6.7)	-	1(3.7)	3(16.7)	-	1(12.5)	1(20.0)	-	-	-	-	-
Weaned	-	-	-	-	2(6.7)	6(22.2)	2(7.4)	6(33.3)	5(31.3)	3(37.5)	3(60.0)	-	1(100.0)	-	-	-
Off	-	-	-	-	-	1(3.7)	4(14.8)	1(5.6)	4(25.0)	2(25.0)	3(75.0)	-	1(100.0)	1(100.0)	1(100.0)	1(100.0)
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
No	1(3.3)	-	-	-	-	-	1(5.9)	-	-	-	-	-	-	-	-	-
Yes	29(96.7)	30(100)	30(100)	30(100)	18(66.7)	23(95.8)	4(23.5)	2(14.3)	8(100.0)	7(100.0)	6(100.0)	5(100.0)	4(100.0)	2(100.0)	-	-
Increase	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Decrease	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
maximal dose	-	-	-	-	-	-	2(11.8)	1(7.1)	-	-	-	-	-	-	-	-
Weaned	-	-	-	-	9(33.3)	1(4.2)	10(58.8)	1(7.1)	-	-	-	-	-	-	-	-
Off	-	-	-	-	-	-	-	10(71.4)	-	-	-	-	-	-	-	-

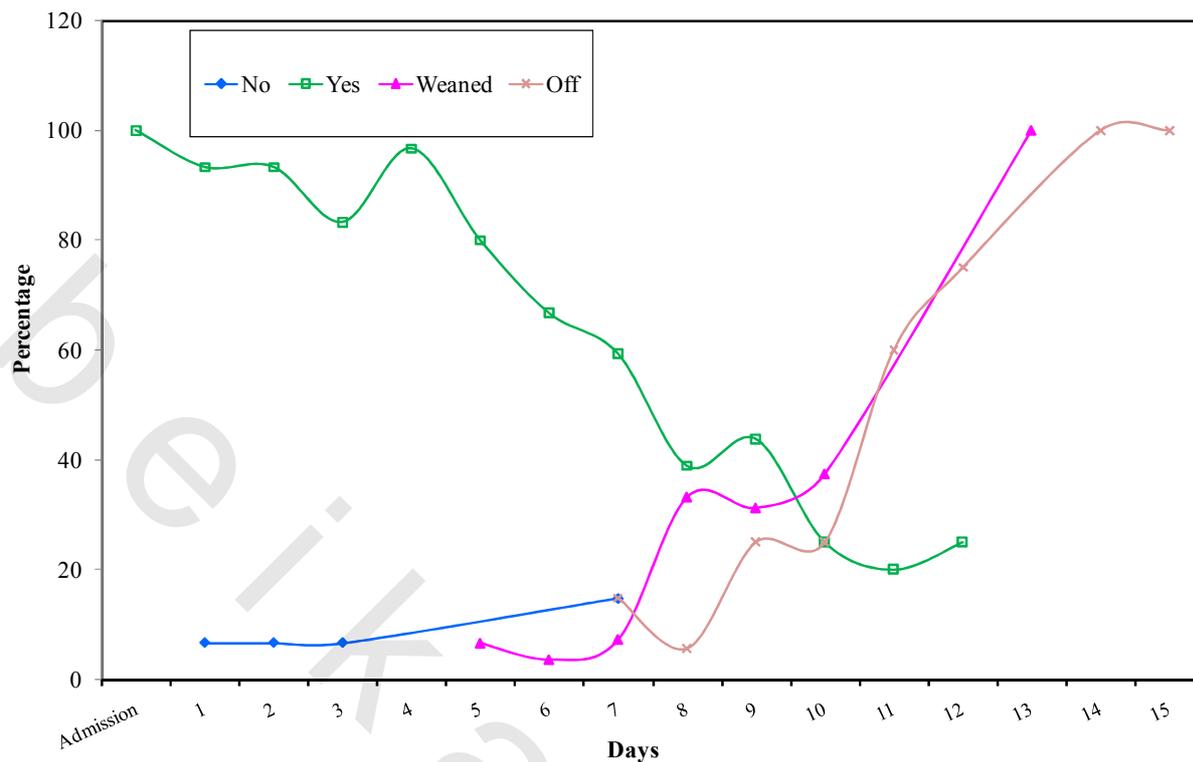


Figure (20): Comparison between the two studied groups according to vasopressors in cases

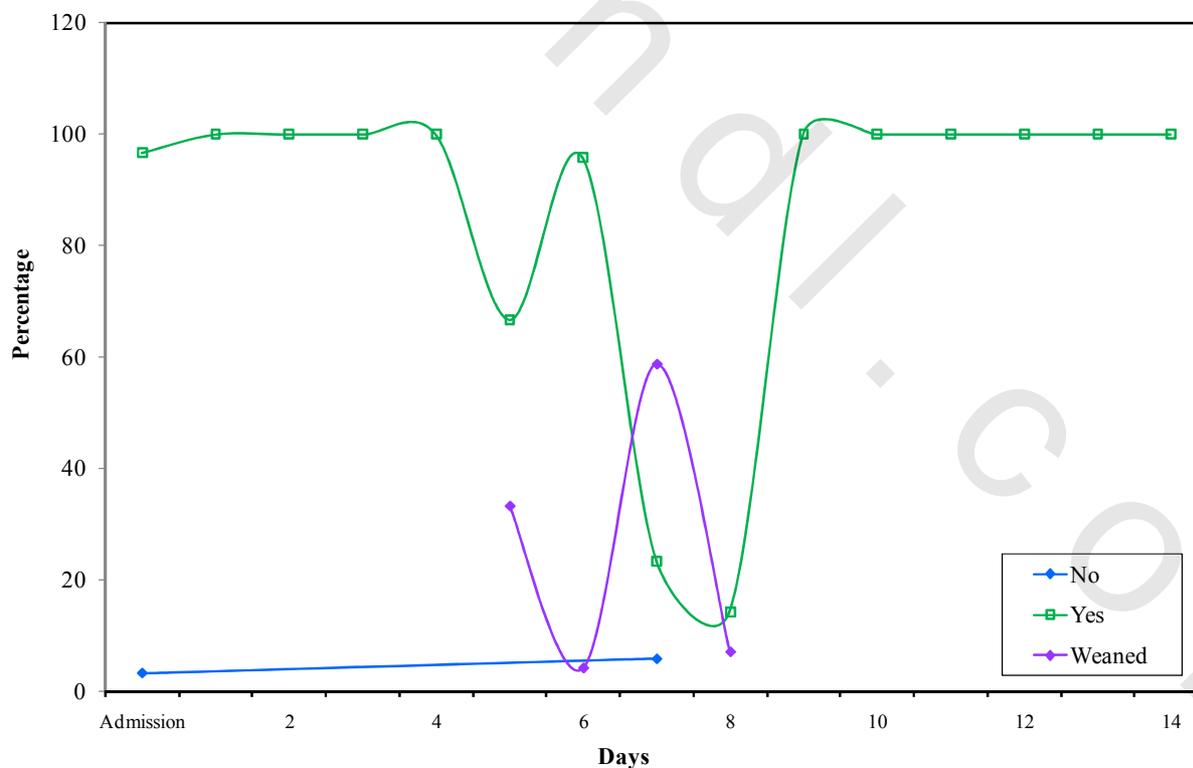


Figure (21): Comparison between the two studied groups according to vasopressors in control

This study was conducted on 60 patients according to sputum culture results .there was no significant statistical difference between 2 groups in specific organism detection

Tables (35): Comparison between the two studied groups according to sputum culture results.

No. (%)	Sputum (Days)														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Cases	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 27)	(n = 25)	(n = 18)	(n = 16)	(n = 7)	(n = 5)	(n = 4)	(n = 1)	(n = 1)	(n = 1)
Acinetobacter	6(20.0)	6(20.0)	6(10.0)	6(20.0)	6(20.0)	5(18.5)	5(20.0)	4(22.2)	3(18.8)	2(28.6)	2(40.0)	2(50.0)	1(100.0)	1(100.0)	1(100.0)
E.coli	4(13.3)	4(13.3)	4(13.3)	4(13.3)	4(13.3)	4(14.8)	3(12.0)	2(11.1)	2(12.5)	1(14.3)	1(20.0)	1(25.0)	0(0.0)	0(0.0)	0(0.0)
Klebsiella	5(16.7)	5(16.7)	5(16.7)	5(16.7)	5(16.7)	4(14.8)	3(12.0)	3(16.7)	3(18.8)	1(14.3)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Proteus	5(16.7)	5(16.7)	5(16.7)	5(16.7)	5(16.7)	4(14.8)	4(16.0)	2(11.1)	2(12.5)	1(14.3)	1(20.0)	1(25.0)	0(0.0)	0(0.0)	0(0.0)
Pseudomonas	2(6.7)	2(6.7)	2(6.7)	2(6.7)	2(6.7)	2(7.4)	2(8.0)	2(11.1)	1(6.3)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
MRSA	5(16.7)	5(16.7)	5(16.7)	5(16.7)	5(16.7)	5(18.5)	5(20.0)	3(16.7)	3(18.8)	1(14.3)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Candida	3(10.0)	3(10.0)	3(10.0)	3(10.0)	3(10.0)	3(11.1)	3(12.0)	2(11.1)	2(12.5)	1(14.3)	1(20.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)
Control	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 30)	(n = 24)	(n = 17)	(n = 14)	(n = 8)	(n = 7)	(n = 6)	(n = 5)	(n = 4)	(n = 2)	(n = 0)
Acinetobacter	5(16.7)	5(16.7)	5(16.7)	5(16.7)	5(16.7)	4(16.7)	3(17.6)	3(21.4)	1(12.5)	1(14.3)	1(16.7)	1(20.0)	1(25.0)	1(50.0)	
E.coli	4(13.3)	4(13.3)	4(13.3)	4(13.3)	4(13.3)	3(12.5)	3(17.6)	3(21.4)	2(25.0)	2(28.6)	1(16.7)	1(20.0)	1(25.0)	0(0.0)	
Klebsiella	5(16.7)	5(16.7)	5(16.7)	5(16.7)	5(16.7)	4(16.7)	2(11.8)	2(14.3)	1(12.5)	1(14.3)	1(16.7)	1(20.0)	1(25.0)	1(50.0)	
Proteus	5(16.7)	5(16.7)	5(16.7)	5(16.7)	5(16.7)	5(20.8)	3(17.6)	2(14.3)	2(25.0)	2(28.6)	2(33.3)	2(40.0)	1(25.0)	0(0.0)	
Pseudomonas	4(13.3)	4(13.3)	4(13.3)	4(13.3)	4(13.3)	3(12.5)	2(11.8)	1(7.1)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	
MRSA	4(13.3)	4(13.3)	4(13.3)	4(13.3)	4(13.3)	2(8.3)	2(11.8)	1(7.1)	1(12.5)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	
Candida	3(10.0)	3(10.0)	3(10.0)	3(10.0)	3(10.0)	3(12.5)	2(11.8)	2(14.3)	1(12.5)	1(14.3)	1(16.7)	0(0.0)	0(0.0)	0(0.0)	

Table (36): Comparison between the studied groups according to outcome

	Cases (n=30)		Control (n=30)		Test of Sig.	p
	No.	%	No.	%		
Outcome						
Discharged	22	73.3	18	60.0	$\chi^2 = 1.200$	0.273
Died	8	26.7	12	40.0		
Day of death	(n=8)		(n=12)			
Min. – Max.	6.0 – 12.0		5.0 – 10.0		Z = 1.001	0.317
Mean \pm SD.	9.0 \pm 2.20		8.33 \pm 1.44			
Median	9.50		9.0			
Arrhythmia						
No	20	66.7	20	66.7	$\chi^2 = 0.000$	1.000
Yes	10	33.3	10	33.3		

t: Student t-test

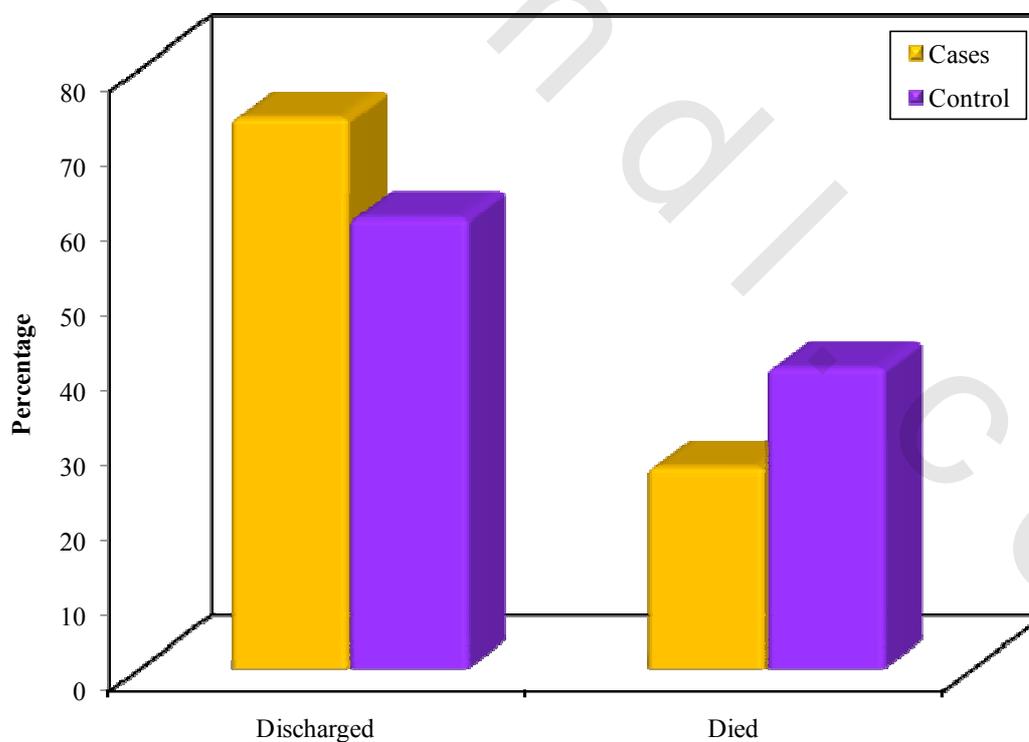
 χ^2 : chi square test

Figure (22): Comparison between the studied groups according to outcome

Table (37): Comparison between the studied groups according to mechanical ventilator and vasopressors days

	Cases (n=30)	Control (n=30)	Z	p
MV days				
Min. – Max.	5.0 – 13.0	6.0 – 14.0		
Mean ± SD.	7.93 ± 2.07	8.63 ± 2.36	1.107	0.268
Median	8.0	8.0		
Vasopressors days				
Min. – Max.	0.0 – 12.0	1.0 -14.0		
Mean ± SD.	6.13 ± 3.15	7.73 ± 3.28	1.748	0.080
Median	6.0	7.0		

Z: Z for Mann Whitney test

*: Statistically significant at $p \leq 0.05$

Table (38): Comparison between the studied groups according to ICU stay length/ days

	Cases (n=30)	Control (n=30)	Z	p
ICU stay length/ days				
Min. – Max.	6.0 – 14.0	5.0 – 14.0		
Mean ± SD.	7.93 ± 2.07	8.63 ± 2.36	1.107	0.268
Median	8.0	8.0		

* Z: Z for Mann Whitney test

: Statistically significant at $p \leq 0.05$

According to outcome. mechanical ventilation days ,vasopressor days ,ICU stay length. There was no significant statistical difference between 2 groups.

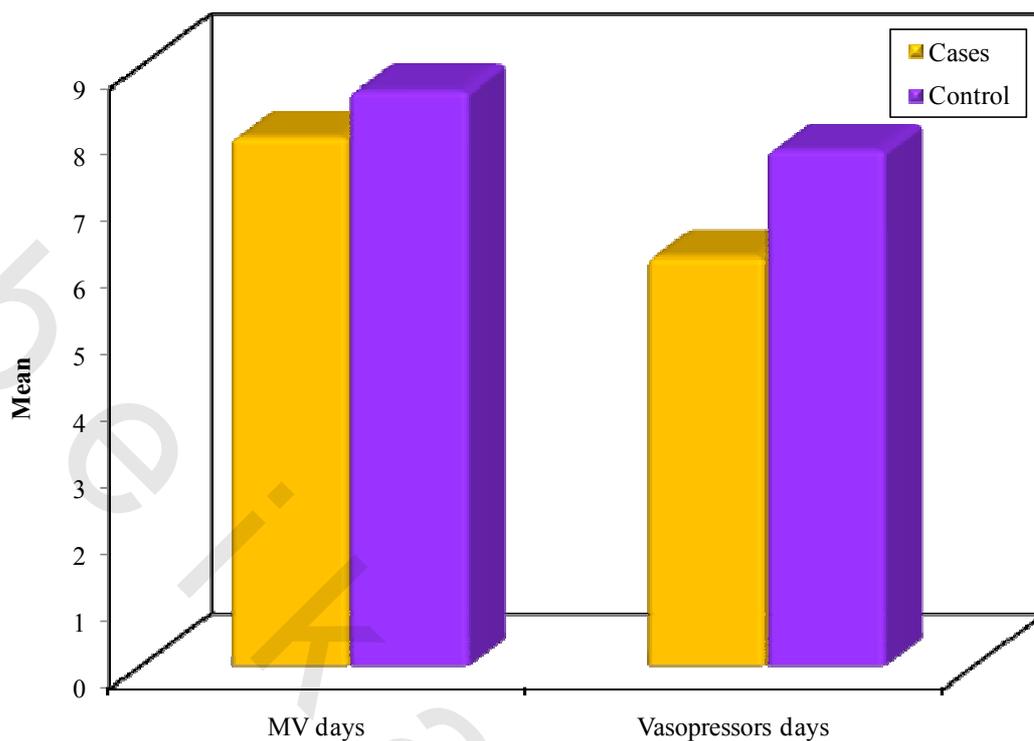


Figure (23): Comparison between the studied groups according to mechanical ventilator and vasopressors days