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ORIGINAL RESEARCH ARTICLE

The corrlation of Duration of hospitalisation and onset of ventilator associated pneumonia

Dr Kiran Tandia[1*] | Dr J.L Wadhwani[2]

[1]Assistant professor department of medicine Bundelkhand medical college sagar, India

[2]Associate professor department of medicine Gmc bhopal, India

Abstract

Abstract-Introduction Ventilator-associated pneumonia (VAP) is defined as pneumonia that occurs 48-72 hours or thereafter following endotracheal intubation, characterized by the presence of a new or progressive infiltrate, signs of systemic infection (fever, altered white blood cell count), changes in sputum characteristics, and detection of a causative agent . VAP contributes to approximately half of all cases of hospital-acquired pneumonia . VAP is estimated to occur in 9-27 % of all mechanically ventilated patients, with the highest risk being early in the course of hospitalization .aims & objectives-to study the association between duration of stay and onset of VAP.Results and conclusion-Incidence is directly proportional to duration of mechanical ventilation iis a strong risk factor for development of VAP. Therefore, duration of ventilation has to be reduced .

Keywords: ventilator associated pneumonia, mechanical ventilator, duration of stay, intubation, nosocomial infection

1 | INTRODUCTION

Infections are the most important and leading cause of mortality and morbidity among the patients admitted in ICU. Nosocomial infections is a critical issue among intubated patients which is responsible for significant morbidity and mortality of these patients (1) one of the most important types of this infection is pneumonia which commonly occurs in relation to the endotracheal intubation and mechanical ventilation named ventilation associated pneumonia (VAP) (2, 3). Patients with mechanical ventilation have an increased risk for respiratory tract infection because the tube which has been inserted into the trachea reduces the clearance of bacteria and increases the leakage of secretion around the cuff of the tube and disable the cilliary tract by damaging to it (4) (10). Clinical diagnosis: Ventilator associated pneumonia usually suspected when the individual develops a new and persistent [>48 hour] or progres-

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Corresponding Author: *Dr Kiran Tandia*
Assistant professor department of medicine Bundelkhand medical college sagar
Email: tandiakiran@gmail.com

sive radiographic infiltrate plus two of the following; temperature >38*c or <36*c, blood leuckocyte count of > 10,000cells/ml or < 5,000cells /ml , purulent tracheal secreations and gas exchange degradation.

Ventilator-associated pneumonia (VAP) is defined as pneumonia that occurs 48-72 hours or thereafter follow¬ing endotracheal intubation, characterized by the presence of a new or progressive infiltrate, signs of systemic infection (fever, altered white blood cell count), changes in sputum characteristics, and detection of a causative agent . VAP is estimated to occur in 9-27 % of all mechanically ventilated patients, with the highest risk being early in the course of hospitalization VAP rates range from 1.2 to 8.5 per 1,000 ventilator days and are reliant on the definition used for diagnosis . Risk for VAP is greatest during the first 5 days of mechanical ventilation (3 %) with the mean duration between intubation and development of VAP being 3.3 days This risk declines to 2 %/day between days 5 to 10 of ventilation, and 1 %/day thereafter. intubated patients nosocomial pneumonia has been associated with a longer ICU stay.

2 | MATERIAL AND METHODS

The study was conducted in Department of Medicine emergency medical ward of a Hamidia hospital Bhopal.over a period of 1 year, extending from July 2013 to December 2014. It was an observational cross sectional study Patients intubated for >48 hour in emergency medical ward due to insufficient self ventilation.were included in study. Patients who already had any respiratory tract infection or any other disease related to respiratory system and Patients who are intubated for <48 hour were excluded from study.

A questionnaire was prepared and each patient selected to be included in the study was screened and monitored according to the questionnaire. Age, sex, date of admission to ICU, date of initiating mechanical ventilation and mode of assess to the patients' airway, i.e. orotracheal or tracheostomy, were recorded. Indication of mechanical ventilation was noted. In each patient, ventilator mode and settings were recorded and any change in setting was recorded daily. Patients' vitals, general and physical examination, oxygen saturation and position of the patients were monitored regularly. All necessary measures were taken for prevention of hospital-acquired infections (5)

Sputum from the patients were collected from the tip of the suction catheter and transported to the laboratory in a sterile tube under all aseptic precautions. Patients were monitored from the date of inclusion in the study to the final outcome in the ICU. VAP was diagnosed on clinical grounds based on the modified CPIS system originally developed by Pugin and others, giving 0–2 points each for fever, leukocyte count, oxygenation status, quantity and purulence of tracheal secretions, type of radiographic abnormality and result of sputum culture and Gram stain. The VAP group was classified into two groups, early-onset type (within 48–96 h) and late-onset type (>96 h

Clinical Pulmonary Infection Score(CPIS)

ParameterScore

Temperature(*C)

>36.5 and <38.40

>338.5 and <38.9 1

>39.0 or <36.52

White Blood Cell Count

>4,000 and <11,0000

<4,000 or >11,0001

<4,000 or >11,000 & band forms>50% 2

Tracheal secretions

None or scant0

Non-purulent1

Purulent2

Pao2/Fio2

>240, ARDS or pulmonary contusion0

<240 and no ARDS2

Chest Radiograph

No infiltrate0

Diffuse or patchy infiltrate1

Localised infiltrate2

Data were analyzed by Microsoft excel and Statistical Package for Social Sciences and the values are reported as number (%). The level of significance was set at P<0.05.

3 | RESULTS

TABLE 1: *Distribution of cases according to duration of stay*

Duration of stay	Culture positive	Negative	Total
<4days	9	52	61
	14.8%	85.2	100%
>4days	16	23	39
	41%	59%	100%
Total	25	75	100

P=0.003 [significant, Longer stay more vap]

TABLE 2: Duration of stay according to number of cases

Duration of stay	Number of cases	% of cases
3	61	61
4	29	29
5	7	7
6	1	1
8	1	1
9	1	1

TABLE 3: Distribution of cases according to type of tracheal secretions

Tracheal secretion type	Culture positive	Negative	Total
Purulent	9	0	9
	100%	0%	100%
Scanty	16	75	91
	17.6%	82.4%	100%
Total	25	75	100

P< 0.00 (significant, all purulent tracheal secretions had vap)

TABLE 4: Age and sex distribution of cases

Age in years	Female	Male	Total
<20	3	6	9
	33.3%	66.7%	100%
20-30	21	20	41
	51.2%	48.8%	100%
31-40	4	10	14
	28.6%	71.4%	100%
41-70	0	12	12
	0%	100%	100%
70 and above	5	19	24
	20.8%	79.2%	100%
Total	33	67	100
	33%	67%	100%

4 | DISCUSSION

It is analysed in our study that those requiring prolonged ventilator support had a significantly higher incidence of VAP (P-value, 0.003) of the 25 patients who developed VAP, 9 patients developed early-onset (14.8%) VAP and 16 patients developed the late-onset type (41.0%).In our study it is also found that purulent secretions associated with positive sputum culture (p value< 0.001). (6)

In the study of our set up, males predominated (67%). The study shows the incidence of VAP in males was 16%, and in females is 9%.

Although the incidence of VAP is high in males but it is statistically not significant (P=o.713) . The study also showsthat there is no significant difference in age as risk factor(P=0.276). The study also shows that patients with longer duration of hospital stay, more chances of development of VAP (p value,0.03].[49] It was proved in our study that duration of mechanical ventilation is an important risk factor for VAP, which is similar to other studies where the mean duration of ventilation was around 10 days and the incidence (7) of VAP was found to be 9.3%. (8) Early-onset VAP in our study was found to be 14.8% while in various study it was found to be around 40%. (9) The low incidence in our study may be due to antibiotic use before admission to the ICU. Studies (10)

Conclusion- Incidence is directly proportional to duration of mechanical ventilation iis a strong risk factor for development of VAP. Therefore, duration of ventilation has to be reduced .

REFERENCES

1. Pugin J, Auckenthaler R, Mili N, Janssens JP, Lew PD, Suter PM;.
2. Kollef MH; 2005.
3. Applengren P, Hellstrom I, Weitzberge, Sodurlund V, Bindslev L, Ransjo U;.
4. Artigas AT, Dronda SB, Valles C, E, Marco M, Uson JV, et al.;.
5. Hiffken G, Niederman MS;.
6. Cunnion KM, Weber DJ, Broadhead WE, Hanson LC, Pieper CF, Rutala WA. Risk factors for nosocomial pneumonia: comparing adult critical-care populations. American Journal of Respiratory and Critical Care Medicine. 1996;153(1):158–162. Available from: https://dx.doi.org/10.1164/ajrccm.153.1.8542110. doi: 10.1164/ajrccm.153.1.8542110.
7. Gadani AH, Vyas;.
8. Rello J, Sa-Borges M, Correa H, Leal SR, Baraibar J;.
9. Park DR. The microbiology of ventilator-associated pneumonia. Respir Care. 2005;50:742–63.
10. Craven DE, Kunches LM, Klinsky V, Lichtenbergda, Make BJ, Mccabe WR;.

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