POSTER DISCUSSION IV

A1019

TITLE : ENDOTRACHEAL INTUBATION INDUCED SINUSITIS AND NOSOCOMIAL PNEUMONIA IN CRITICALLY ILL PATIENTS

AUTHORS : J.L. Leguillou, MD ; J.J. Rouby*, Ph. D, MD ; J. Xiang, MD ; M.H. Nicolas, MD ; E. Candaut, MD ; P. Viars, MD.

AFFILIATION : Département d'Anesthésie. GH Pitié-Salpêtrière, 83 bd de l'Hôpital 75013 PARIS Université Paris VI - FRANCE -

Oropharynx colonisation by gram negative bacterias represents one of the main causes of nosocomial bronchopneumonia[1]. Bacterial maxillary (M) sinusitis is found in 2/3 of patients with prolonged nasotracheal intubation[2]. The aim of this study was to examine relationships between endotracheal intubation induced M sinusitis and nosocomial bronchopneumonias.

METHODS

Twenty nine critically ill patients (mean age 53.5 yrs) who required mechanical ventilation were included in the study according to the following criterias : 1) presence of nosocomial pneumonia (clinical and radiologic signs + positive protected bronchoalveolar lavage[3]) ; 2) presence of bacterial M sinusitis (positive CT scan + positive sinus content following transnasal puncture[2]). In each patient, bronchopneumonia always followed bacterial M sinusitis. Microorganisms, which had been identified in maxillary sinus content and then, in alveolar lavage, were compared in each patient.

RESULTS

1) The mean time between initial intubation and diagnosis of M sinusitis was of 92 hours (extremes 12 h - 12 days). The mean time between diagnosis of M sinusitis and nosocomial pneumonia was of 68 hours (extremes 2 h - 10 days).

2) Fifty five microorganisms were recovered from the maxillary sinus in high concentrations : 23 % < 10^3 cfu/ml, 64 % between 10^3 and 10^5 cfu/ml and 13 % > 10^5 cfu/ml. Forty eight microorganisms were recovered from the minialveolar lavage in lower concentrations. Thirty five per cent of bacterias were gram (+), 59 % gram (-) and 6 % yeasts.

3) In 14 patients (49 %), bacterias infecting lungs were identical to bacterias infecting maxillary sinus. In 3 patients with polymicrobial M sinusitis, one of the bacterias identified in the sinus, secondarly infected the lung. In 3 patients with polymicrobial pneumonia, one of the bacterias infecting the lung was initially identified in the sinus. In 9 patients (31 %), different microorganisms were found in the maxillary sinus and in the lungs.

CONCLUSIONS

These results suggest that not only the colonized oropharynx but also the infected maxillary sinus are potential bacterial reservoirs from which superinfection of lung parenchyma can occur. The high concentrations of microorganisms found in the maxillary sinus outline the severity of sinus infection following nasotracheal intubation.

REFERENCES

1 - Intensive Care Med. 13 : 347-351, 1987
2 - Anesthesiology 73 : A 1224, 1990.
3 - Anesthesiology 71 : 679-685, 1989.

A1020

TITLE : ENDOTRACHEAL INTUBATION INDUCED MAXILLARY (M) SINUSITIS : A PROSPECTIVE RANDOMIZED STUDY

AUTHORS : J.L. Leguillou, MD ; J.J. Rouby*, Ph. D, MD ; J. Xiang, MD ; A. Zouaoui, Ph. D, MD ; M.H. Nicolas, MD ; S. Ghedira, MD ; M.L. Gosgnach, MD ; P. Viars, MD

AFFILIATION : Département d'Anesthésie. GH Pitié-Salpêtrière, 83 bld de l'Hôpital, 75013 Université Paris VI - FRANCE -

When using CT scan and transnasal puncture as diagnostic tools, bacterial M sinusitis is found in 66 % of recently intubated patients[1]. In this study, nasotracheal intubation and orotracheal intubation were prospectively compared in terms of nosocomial maxillary sinusitis.

METHODS

Forty nine critically ill patients who required mechanical ventilation were included in the study after the absence of M sinusitis was demonstrated by a CT scan performed within 48 hours following admission. Only 33 patients completed the study (7 could not be randomized, 3 died and 6 were extubated before the 7th day).

Immediately after the initial CT scan showing free maxillary sinus, each patient was included by randomization in one of the following groups : group A : orotracheal intubation + orogastric tube ; group B : nasotracheal intubation + nasogastric tube. A new CT scan was performed 7 days later. When radiologic M sinusitis was present, a transnasal puncture of the maxillary sinus was performed under general anesthesia after desinfection of the nares. Sinus content was immediately bacteriologically processed using quantitative analysis.

RESULTS

1) As shown in the Table, 76 % of nasotracheally intubated patients and 12 % of orotracheally intubated patients had evidence of radiologic M sinusitis after 7 days of mechanical ventilation ($p < 0.001$).

2) Ten of the 15 radiologic M sinusitis were considered bacterial sinusitis according to quantitative criterias (1 in group A, 9 in group B). Five were polymicrobial (2 or more bacterias).

3) Twenty microorganisms were isolated (8 gram positive bacterias, 10 gram negative bacterias and 2 yeasts) in various concentrations : < 10^3 cfu/ml n = 5, between 10^3 and 10^5 cfu/ml n = 10, > 10^5 cfu/ml n = 5.

CONCLUSION

This study demonstrates that bacterial M sinusitis characterized by high concentrations of bacterias (> 10^3 cfu/ml) is provoked by nasotracheal intubation and can be prevented by positioning endotracheal and gastric tubes via the oral route.

$p < 0.001$	PRESENCE OF RADIOLOGIC M SINUSITIS (7-day CT scan)	ABSENCE OF RADIOLOGIC M SINUSITIS (7-day CT scan)
GROUP A n = 16	2	14
GROUP B n = 17	13	4

REFERENCE

1 - Anesthesiology 73 : A 1224, 1990.