SUMMARY

In ICU, the host defense of patients are usually altered because of their underlying diseases, and devices that are used. They can not cough efficiently due to sedation or underlying disease. And also, when they are intubated, the endotracheal tube holds the vocal cords open and facilitates aspiration. ***(Alp and Voss, 2006)***.

Ventilator –associated pneumonia is defined as pneumonia occurring more than 48 hours after patients have been intubated and received mechanical ventilation ***(Steven et al., 2006)***.

Anaerobic bacteria are considered to be common pulmonary pathogens, and they are believed to play a major role in aspiration and nosocomial pneumonia. ***(Marik & Careau, 1999).***

This work aimed to study the frequency of colonization of intubated ICU patients by anaerobic bacteria and their role in acquired ventilation associated pneumonia.

This study was done at the intensive care unit of Benha University Hospital from December 2009 to September 2010 on thirty five Patients (fourteen males and twenty one females). Their age ranged from 16– 86 years old . Those patients were suffered from either eplipsy , cerebrovascular stroke (CVS) , renal failure, respiratory failure , chronic obstructive pulmonary disease (COPD) and car accident , all patients were mechanically ventilated.

Two tracheal aspirate samples were taken, first sample within 24 hour from intubation, while the second sample after 72 hour from intubation using sterile disposable mucus extractor. Direct smears , Gram staining , and anaerobic culture on Robertson cooked meat media for 24-48 hour were done . Subcultures were made on the selective media i.e anaerobic selective blood agar and MRS agar using the anaerobic gas pack jar . Then identification was done by colony morphology , staining , and identification of anaerobic bacterial species by using RapID-ANA II system. Antibiogram was done for anaerobic bacterial isolates by disc diffusion method using anaerobic gas pack jar.

From 35 cases of mechanically ventilated patients in this study 18 patients were suffered from cerebrovascular stroke, 5 patients were suffered from renal failure, 7 patients were suffered from respiratory failure and 5 patients were suffered from shock.

Among 35 mechanically ventilated patients in this study , 27 patients were suffered from chronic diseases, 13 patients were suffered from diabetes mellitus and 18 patients were suffered from hypertension. Four out of 27 patients were suffered from both diabetes mellitus and hypertension.

The results of the study showed the following:

1- Six out of 18 patients with hypertension (33.3%) gave positive result for anaerobic culture of tracheal aspirate samples within 24h of intubation while all 18 patients (100%) gave positive result for anaerobic culture of tracheal aspirate samples after 72h of intubation.

2- Four out of 13 patients with diabetes mellitus (30.8%) gave positive result for anaerobic culture of tracheal aspirate samples within 24h of intubation while all 13 patients (100%) gave positive result for anaerobic culture of tracheal aspirate samples after 72h of intubation.

3- Five out of 18 patients with cerebrovascular stroke (27.8%) gave positive result for anaerobic culture of tracheal aspirate samples within 24h while all (100%) gave positive result for anaerobic culture of tracheal aspirate samples after 72h.

4- Only ten (28.6%) out of thirty five mechanically ventilated patients in ICU gave positive result of anaerobic culture of tracheal aspirate samples taken within 24 hour of intubation. They were ***Peptostreptococci*** (34.6%), ***Clostridium*** (11.5%), ***Lactobacillius*** (30.6%) and ***Bacteroides*** (23.1%) . On the other hand, thirty two (91.4%) out of thirty five mechanically ventilated patients in ICU gave positive result of anaerobic culture of tracheal aspirate samples taken after 72 hour of intubation. They were ***Peptostreptococci*** (19.5%), ***Clostridium*** (7.8%), ***Lactobacillius*** (24.3%) , ***Bacteroid***es (5.8%), ***Prevotella*** (15.5%), ***Fusobacterium*** (15.5%) and ***Veillonella***(11.6%) .

5- The incidence of anaerobic isolates increase from (28.6%) in tracheal aspirate samples taken within 24 hour of intubation to reach (91.4%) in samples taken after 72 hour of intubation , a difference which is statistically highly significant ($p<0.001$) . This means that the frequency of colonization by anaerobic organisms increase by prolonged intubation and so they can play a role in VAP.

6- The most important anaerobic species isolated from intubated mechanically ventilated patients were ***Bacteroid spp*** from 6 patients**,** ***Prevotella*** was ***Prevotella melaninogenica*** from 7 patients**,** ***Prevotella oris*** from 5 patients and ***Prevotella oralis*** *group* from 4 patients **,** ***Fusobacterium*** was ***Fusobacterium nucleatum from*** 16 patients , ***Lactobacilli*** was ***Lactobacilli acidophillus*** from 16 patients and ***Lactobacilli catenaforme*** from 9 patients **,** ***Peptostrept*** was ***Peptostrept anaerobius*** from 9 patients **,** ***Peptostrept hydrogenalis*** from 7 patients and ***Peptostrept micros*** from 4 patients , ***Veillonella*** spp. from 12 patients **.**and finally ***Clostridium*** spp**.** from 4 patients .

7- Metronidazole was found to be the most effective antimicrobial against all isolated anaerobic strains as all anaerobic strains showed (100%) sensitivity to it.