A Comparative Study To Assess Effect Of Discontinuation Of Proton Pump Inhibitors (Ppis) After 48 Hours On Admission In Critical Care Unit On Incidents Of Nosocomial Pneumonia

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Abstract

The aim of this study was to determine whether the use of gastric acid-suppressive agents increases the risk of nosocomial pneumonia (NP) in the Critical care unit population. The methodology adopted for experimenting with the effectiveness of the use of proton pump inhibitors in two study groups and evaluated the result with the help of APACHE II and CPIS calculator. The researcher performed an experimental study with a non-probability purposive sampling technique in a multi-critical care unit that included 60 critically ill patients from January 2021 to October 2021 at Krishna Hospital, Karad. The researcher divided patients into two groups after initiation of enteral feeding on a random basis, one group of patients with PPI and another group without PPI. Both of the groups were evaluated the risk of suspected HAI with the aid of medical classification tools, APACHE-II, GCS, and CPIS at the time of admission and followed by consequent times irrespective of their diagnosis and treatment. There was no significant difference between the two groups for any of the scores (P>0.05) indicates very few cases of nosocomial pneumonia in Krishna Hospital, Karad. In short, prior use of a proton-pump inhibitor did not correlate with a significant increase in the risk of developing Nosocomial Pneumonia (NP). Apart from Proton Pump Inhibitors, there is a plethora of treatments, nursing care received by critical care patients with various physical illnesses & symptoms. It is also important to treat different pre-disposing and existing clinical conditions because those factors affect the functional outcome of the patient. Further studies are required for more clarification related to correlating the effect of PPIs and early detection of HAI. For this, a standard group selection is suggested on matching diagnoses with similar hemodynamic status.

What Is a Proton Pump Inhibitor and How Does It Work?

Proton pump inhibitors are powerful acid-reducing drugs. PPI drugs target proton pumps in the stomach. These tiny pumps cause a chemical reaction that produces stomach acid. PPIs limit the amount of acid the pumps produce.
Aim

- To investigate the association between the uses of proton pump inhibitors (PPI) and nosocomial pneumonia in critical care patients receiving feeding.
- To carry over a comparative study to assess use of Proton Pump Inhibitor indicators.

OBJECTIVES

- To assess patients who had an Acute Physiology and Chronic Health Evaluation score (APACHE II) of less than 25.
- To calculate Clinical Pulmonary Infection Score (CPIS) to confirm VAP/NP (if a score of 7 out of 14 need to obtain).
- To compare between patients with Proton Pump Inhibitors (PPI) till discharge and another study group stopping of Proton Pump Inhibitors (PPI) after 48 hours on incidence of Nosocomial Pneumonia (NP) or after initiation of enteral feeding.

OBJECTIVE:- Relevance to study

- To determine whether the use of gastric-acid-suppressive agents increases the risk of nosocomial pneumonia (NP) in the Critical Care Population

HYPOTHESIS

- H0: Holding PPI after 48 hours of hospitalization after enteral feeding will reduce NP
- H1: There is no proper guidelines/protocol to stop PPIs even after enteral feeding & stopping of PPIs will reduce adverse effects associated with PPIs.

ETHICAL ASPECT

- The study was conducted after the prior permission of the ethical committee.
- A written permission is obtained from higher authorities for data collection (MD, Dean & HOD)
- Privacy and confidentiality have been maintained.
- Scientific objectivity was maintained with honesty and impartiality.
- Consent from participant’s close relatives has been taken for data collection to fulfill research activities in 3
NEED FOR THE STUDY

- Proton pump inhibitors (PPIs) are the most commonly prescribed drugs. There is no sufficient study on the prevention of NP associated with PPIs.
- Concerns about long-term use of PPI: Increased risk of developing gastric cancer, CKD, chronic arthritis in women.
- My study aim is to stop PPI and reduce the risk of developing NP and associated disorders.

Organization of Literature Review

Mathieu Beaulieu MSc, et al. 2008

**Author - Findings**
The use of gastric acid-suppressive agents increases the risk of nosocomial pneumonia (NP)

**Related to this study**
Prior use of a proton-pump inhibitor did not correlate with a significant increase in the risk of developing NP.

**Findings in this study**
The risk for patients who received PPIs (adjusted hazard ratio [AHR] 0.63; 95% CI 0.39-1.01) was not significantly different than in non-exposed patients.

Alan B R Thomson et al. 24 June 2013

**Author - Findings**
Proton pump inhibitors and the risk of pneumonia

**Related to this study**
VAP is a common nosocomial infection occurring in mechanically ventilated patients.

**Findings in this study**
According to CPIS III score, there were 2 (6.6%) patients from PPI group and 1 (3.3%) patients from no PPI group who suffered from VAP/NP.

Sources of Literature

Olsen and Devlin, Tsai et al. 2009

**Relevant to this study**
Bioavailability of Enterally administered PPI was lower than IV

**Study relevant in nursing**
Acid suppressing ability of enteral administration was greater than IV - need further study

different languages (English, Hindi & Marathi)
The potential interaction between PPIs and antiplatelet agents has been the subject of multiple studies. CKD, Dementia.

PPIs produce an environment conducive to certain infections:- development of Clostridium difficile and pneumonia.

It is observed little consistent evidence of an increased risk of gastric cancer with PPI use and hypomagnesemia; rheumatoid arthritis in women.

Use of proton pump inhibitors (PPIs) and increased Clostridium difficile infection (CDI) risk.

**Methodology & Procedure**
Step 1
Methodology adopted
An experimenting method with respect to the effectiveness of proton pump inhibitors in two study groups.

Step 2
Identification of target and accessible population
Researcher identified 200 bedded multi-critical care units that included 60 critically ill patients from January 2021 to October 2021 at Krishna Hospital, Karad.

Step 3
Research design
The researcher performed an experimental study with a non-probability purposive sampling technique.

Step 4
The researcher divided patients into two groups after initiation of enteral feeding on a random basis, one group of patients with PPI and another group without PPI.

Step 5
Both of the groups were evaluated the risk of suspected HAI with the guidance of medical classification tools, APACHE-II, GCS, and OPIS at the time of admission and followed by consequent times irrespective of their diagnosis and treatment.

SELECTION CRITERIA

INCLUSION CRITERIA

- Patients admitted in critical care unit with need of enteral feeding
- Age group: Patients above 14 years of age
EXCLUSION CRITERIA

- NBM Patients
- Patients/relative not willing for the study
- Patients admitted in critical care unit with multiple co morbidities.
- Patients who are mentally challenged

PILOT STUDY

To this project, a feasibility study was conducted with 5 subjects to assess the possibility of this study
Non – probability purposive sampling was used to select the subjects.
Management and administrative permissions were procured formally of the particular hospital selected for the pilot study.
The study was found feasible after the pilot study.

RESULTS, ANALYSIS AND INTERPRETATION OF DATA

- Unpaired t test was done with the guidance of “instat work sheet software
- A comparative study was performed: one group of patients with Proton Pump Inhibitors (PPI) therapy and second group with stopping of Proton Pump Inhibitors (PPI) after 48 hours till discharge.
- There was no significant difference between two groups for any of the scores (P>0.05).

A GRAPHICAL REPRESENTATION OF PATIENT’S DEMOGRAPHIC DATA

Bar diagram representing distribution of critical care patients to age
Incidence of patients who had an Acute Physiology and Chronic Health Evaluation score (APACHE II) of less than 25: NP more (78%) in PPI with enteral Feeding (68%) without PPI

Incidence of patients who had (APACHE II) of less than 25 (n =60).
Apart PPI, there are a plethora of treatments, nursing care received by critical care patients with various physical illnesses & symptoms. It is also important to treat different pre-disposing and existing clinical conditions because those factors affect the functional outcome of the patient. The study only assessed patients on Proton Pump inhibitors for more than 48 hours in selected hospital Karadon random based selection. This study was resulted a very less patients are causing HAP with or without PPI treatment due to large number of different types of critical care diagnoses irrespective of hemodynamic status. The study required to carry over same group of clients with similar diagnosis and clinical status to obtain a significant and accurate result of two variable groups.

**LIMITATIONS**

- To clarify the cause of HAP with or without PPI medication on different types of diagnosis on similar hemodynamic status.
- To identify definite cause of increasing hospital mortality rate with respect to the use of PPI treatment and to

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**Comparison between patients with Proton Pump Inhibitors (PPI) till discharge and study group stopping of Proton Pump Inhibitors (PPI) after 48 hours.**

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**Recommendations to Nursing Practice/ scope of future research study**

- To clarify the cause of HAP with or without PPI medication on different types of diagnosis on similar hemodynamic status.
- To identify definite cause of increasing hospital mortality rate with respect to the use of PPI treatment and to
compare with non-PPI.

- To find out long-term effects of PPI uses with enteral feeding.
- Diagnostic criteria: Develop a standardized categorical and dimensional criterion for diagnosing various critical care conditions that may include in vulnerable categories.
- Long term use of PPI: Early recognition of HAI and treatment on longitudinal outcome. Once standardized criteria for diagnosis are developed, both prospective and retrospective studies using case control methodologies could facilitate this objective.

CONCLUSION

- Long time use of a proton-pump inhibitor did not correlate with a significant increase in the risk of developing Nosocomial Pneumonia (NP).
- There was no significant difference between the two groups for any of the scores (P>0.05) indicates very few cases of nosocomial pneumonia in Krishna hospital, Karad.

BIBLIOGRAPHY