

EVALUATION OF ACCURACY OF PESAS SCORE IN PREDICTING OUTCOME OF EMERGENCY ABDOMINAL SURGERIES

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Abstract

Background and Objectives: This was an observational prospective study to predict the accuracy of PESAS score in detecting the outcome of emergency abdominal surgeries.

Materials and Methods: This study consisted of 80 selected patients admitted with features suggestive of Acute Abdomen in Krishna hospital, Karad from January 2021 to June 2022 (18 Months). All the patients were graded based on the PESAS scoring system. The collected data was coded and put into a Microsoft Excel Worksheet. The statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 21 for Windows. Data were expressed as frequency and proportions were reported for categorical variables. The p-value < 0.05 was considered statistically significant using Chi-square test. The test were two tailed and 95% confidence interval and an alpha level of 5% and a probability value of <0.050 was considered as statistically significant.

Results: A total of 80 patients were selected for the study. 69 patients had a score of less than 8 out of which all 69 survived and there were no non-survivors. 6 patients had a score between 9 and 12 out of which 1 survived and 5 did not survive. 5 patients had a score between 13 and 15 out of which none survived and 5 died. Patients with a score of 8 and <8 had a 100% survival rate. Patients with score between 9 and 12 had a 16.66% survival rate. Patients with a score between 13 and 15 had a 0% survival rate.

Conclusion: The PESAS score is a good pre-operative bedside tool to have for a surgeon so as to help him/her in assessing a patient prior to surgery and deciding the amount of care and extra attention that the patient needs. It also gives the surgeon the advantage of categorising patients in a stepladder format such that patients higher up the ladder are monitored extensively than the patients lower down the ladder. It also helps the surgeon in preoperative counselling of the patient's relatives about the outcome of the surgery and the degree of risk involved intra-operatively.

Introduction

The surgical field is metamorphosing at a rapid rate and newer forms of surgical practices are emerging. The basic pathological concepts about diseases are also changing. The ultimate goal of all of these changes is decreasing the trend of morbidity and mortality among the patients. Utmost care should be taken to limit morbidity among Elective procedures and mortality among Emergency procedures. Prior to being able to address the above mentioned problems, a tool such as

a scoring system must be used to quantify the preoperative morbidity and mortality in patients undergoing major invasive surgical procedures. These systems are devised so as to take various physiological and biochemical parameters and assess them so as to provide an approximate of the various disease changes occurring in the patient's physiology. Assessing the inherent postoperative morbidity and mortality risk is vital for appropriate relative counselling about the need and outcome of the surgical intervention. It also helps in quantifying the quality and care of the intervention.

The number of cases requiring emergency intervention is seen to be gradually rising in the

Melting pot over the past few decades. Emergency intervention requirement accounted for more than 28 million admissions between 2002 and 2011. One out of three of these patients required surgical intervention. Many Scoring systems have been devised in the past for outcome of surgeries, But most of these risk-adjusting studies have exclusively been concentrating on patients demographics, Co-morbidities and underlying diseases or conditions. Very minimal attention has always been given to the impact on the acuity of the disease at presentation. Many medical and intensive care scoring systems have shown light over the relation of deranged physiological parameters and severity of the condition. It is this concept that threw light on the need for such a scoring system in the

Surgical world for better evaluation and management of surgical diseases. This Line of thought gave birth to the PESAS score i.e the "PHYSIOLOGICAL EMERGENCY SURGERY ACUITY SCORE". The PESAS scoring system was developed in 2011 by Dr. Fatima Naveen Sangji who is a practising general surgeon in the University of Michigan. A Brief knowledge about the PESAS score and its application into daily clinical practice by a surgeon will help him in not only early assessment of the patient's post operative outcome but also helps in keeping the surgeon informed about the need for critical care of the patient postoperatively and also better informing of condition and outcome of the surgery to the patient's relatives.

Materials and Methods:

An observational prospective study was carried out in patients undergoing Emergency Abdominal Surgery in the General Surgical wards of Krishna Institute of medical sciences and hospital which is a Tertiary care hospital during the period starting from January 2021 to June 2022. The study population consisted of a total of 80 patients with abdominal pathologies which were confirmed on Emergency Laparotomy.

Inclusion criteria

1. Age between 5 years and 80 years
2. Patients undergoing Emergency Abdominal Surgery

Exclusion criteria

1. Age greater than 80 years
2. Age less than 5 years
3. Pregnant Patients
4. Patients with Abdominal Emergency but treated conservatively

Patients were selected for the study by using systematic sampling technique and every 5th patient that presented to the outpatient department with signs and symptoms of abdominal emergency that needed operative management was selected for the study.

Results:

AGE	n	%
<10	5	6.25
11-20	7	8.75
21-30	7	8.75
31-40	9	11.25
41-50	16	20
51-60	13	16.25
61-70	13	16.25
71-80	10	12.5

Table No: 1 Distribution of age group according to majority of the patients 16(20%) in age group of 41-50, 13(16.25%) patients are similarly, in age group of 51-60 years and 61-70 years, 10(12.5%) patients in age group of 71-80 years, 9(11.25%) patients in age group of 11.25 years,

7(8.75%) patients are also similarly, in age group of 11-20 years and 21-30 years and minority of the patients 8(13.33%) are age group of above 66 years and minority of the patients 5(6.25%) in age group below 10 years.

GENDER	n	%
MALE	43	53.75
FEMALE	37	46.25

Table no: 2 Distribution of the samples according to the gender shows that majority of the patients 43(53.75%) are male and minority of the patients 37(46.25%) are female.

DIAGNOSIS	n	%
ACUTE APPENDICITIS	25	31.25
ACUTE CHOLECYSTITIS	4	5
GRADE IV SPLEEN INJURY	1	1.25
INTESTINAL OBSTRUCTION	19	23.75
INTESTINAL PERFORATION	16	20
LIVER LACERATION	4	5
SPLEENIC LACERATION	2	2.5
STRANGULATED HERNIA	9	11.25

Table no: 3 Distribution of the samples according to the diagnosis shows that majority of the patients 25 (31.25%) are acute appendicitis, 19(23.75%) intestinal obstruction, 16(20%) are intestinal perforation, 9(11.25%) are strangulated hernia, 4(5%) are similarly both acute cholecystitis and liver laceration, 2(2.5%) are splenic laceration minority of the patients 1(1.25%) are grade IV spleen injury.

VENTILATOR REQUIREMENT	n	%
YES	7	8.75
NO	73	91.25

Table no: 4 Distribution of the samples according to the ventilator requirement shows that majority of the patients 73(91.25%) are ventilator required and minority of the patients 7(8.75%) are not ventilator required.

Discussion:

An Observational prospective study among 80 patients admitted with Acute Abdominal Emergencies for emergency abdominal surgery with the objective to show the efficacy of PESAS in evaluating outcome of the surgery using preoperative biochemical parameters. The selected cases for the study which were admitted to Krishna Hospital ,Karad were closely monitored from the time of admission to the day of discharge. The study included Patients undergoing Abdominal Emergency surgery I.e surgically managed cases of Acute Appendicitis, Small Bowel Obstruction, Small Bowel Perforation, Acute Cholecystitis, Spleen Injury, Liver Injury and Strangulated Hernias. The Following Tables and figures show age distribution of participants of the study .The maximum group of patients of the study sample belonged to 51-70 years of age.(n=26 32.5%). Males were found to be larger in number(n=43 53.75%) than Females(n=37 46.25%). Out of the total 80 Patients , 31.25% patients were diagnosed with Acute Appendicitis (n=25), 23.75% were diagnosed with Intestinal

Obstruction(n=19),20% were diagnosed with Intestinal Perforation (n=16), 11.25% were diagnosed with Strangulated Hernia (n=9) , 5% were diagnosed with Acute cholecystitis (n=4) ,5%were diagnosed with Liver Laceration(n=4),2.5% were diagnosed with Spleen Laceration (n=2).A total of 25 patients of Acute Appendicitis were operated on ,Out of which 100% of the patients survived (n=25),19 patients of Intestinal Obstruction were operated on out of which 94.7% survived (n=18),16 Patients of Intestinal Perforation were operated on,Out of which 62.5% of the patients survived(n=10),4 Patients of acute cholecystitis were operated on Out of which 100% patients survived(n=4), 5 patients of Spleen Injury were operated on, Out of which 60% survived (n=3), 6 patients of Liver Injury were operated on ,Out of which 50% survived (n=3), 9 patients of Strangulated hernia were operated on , Out of which 100% survived (n=9).Out of the Total 80 Patients taken up for the study, 8.75%(n=7) were found to have requirement of Ventilator with 72 hours of pre operative period.91.25%(n=73) were found to have no requirement for the same .The Patients with no requirement were found to have significantly higher Survival rates than those with the need for requirement.The P value was found to be <0.0001 which statistically was proven significant.Out of the total 80 Patients taken up for the study, 87.5% (n=70) improved Postoperatively where as 12.5% (n=10) succumbed to morbidity and mortality.When an association was tried to be made between Age Group and Surgical Outcome in these patients,Highest Group of survivors were found to be in the 4th Decade I.e out of 16 patients ,14 survived(81.5%) and 2(18.5) were non-survivors. Followed by Patients belonging to the 5th and the 6th decade with A total of 13 patients each and 12(92.3%) and 9 (69%)survivors respectively.The P value of this study was found to be 0.66(>0.05)which proves that this is a statistically insignificant association.The patient's Preoperative Parameters were recorded at the time of admission and Points were awarded to the patients based on the amount of derangement recorded among the parameters. The highest score awarded was 15 and lowest was 0 which showed that the patient has no derangement in the parameters.A total of 69 Patients had a PESAS score between 0 and 8 ,Out of which 100%(n=69) were survivors and 0% were non survivors.6 Patients had a score between 9 and 12 ,Out of which 16.7%(n=1) were survivors and 83.3%were non survivors.5 Patients had a score between 13 and 15 ,Out of which 0%(n=0) were survivors and 100% were non survivors.A PESAS score of ≤ 8 was found in 86.25%(n=69) patients and a score of >8 upto 11 was found in 2.5%(n=2) and a score of 12-15 was found in 11.25%(n=9).All of the patients with score <8 survived and 80% of patients with score 9-11 survived(n=4) and all the patients with a score 12 and above did not survive.The P value of all these 3 groups was found to be <0.05 suggestive of a statistically correct association between the parameters and the PESAS scoring system.

Conclusion:

Males have a higher preponderance to abdominal emergencies as compared to females.Patients in the fifth decade of life are at the highest risk of experiencing an abdominal emergency.Acute Appendicitis presents as the most common abdominal emergency.Post operative mortality is maximum in patients classified into the poor outcome group.Patients in requirement of mechanical ventilation in the pre-operative period have very high mortality rates.Using the PESAS score to assess the outcome of surgically managed Abdominal emergencies is a good idea preoperatively.It gives the treating surgeon a facility to arrange patients in a step ladder manner.The Patients

Higher up in the ladder can be observed closely postoperatively for complications and better healthcare can be provided to these patients.A

Patient lower down the ladder can be expected to recover earlier and at a faster rate without extensive care being provided to them.These Patients can also be shifted to general wards earlier. The score also helps us in Preoperative counselling of the patient relatives regarding the expected Surgical Outcome and the associated complications.In the postoperative period.The patients higher up the ladder of the scoring system have higher chances of succumbing to post operative complications and this can be explained to the relatives so as to achieve better

compliance from their side during the post operative period and hospital stay. The PESAS score can be used as a supplement to the disease specific scoring systems in assessing postoperative mortality using preoperative parameters but cannot be used as a substitute to them.

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