USEFULNESS OF MANNHEIM'S PERITONITIS INDEX SCREENING SYSTEM IN PREDICTING OUTCOME IN PATIENTS WITH PERITONITIS

By

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Dissertation Submitted to

Sumandeep Vidyapeeth,

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In Partial Fulfillment

Of the Requirements for the Degree of

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Under the guidance of

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2015-2018

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Dr. Sagar Vaghela

ABSTRACT

INTRODUCTION

Peritonitis is an inflammation of the peritoneum, the thin tissue that lines the inner wall of the abdomen and covers most of the abdominal organs. Peritonitis may be localized or generalized, and may result from infection (often due to rupture of a hollow abdominal organ as may occur in abdominal trauma or inflamed appendix) or from a non-infectious process.

Early prognostic evaluation of patients with peritonitis is desirable to select high-risk patients for intensive management and also to provide a reliable objective classification of severity and operative risk. This study attempts to evaluate the use of scoring Mannheim Peritonitis Index (MPI) in patients with peritonitis.

AIM

1. To assess the effectiveness of Mannheim Peritonitis Index (MPI) in predicting mortality in patients who presented with features of peritonitis.

OBJECTIVES

1. To study Prognosis according to Mannheim Peritonitis Index.
2. For Early intervention for those in need according to classification.

MATERIAL AND METHODS

This prospective study was conducted in Dhiraj General Hospital.

It was conducted between July 2016 to September 2017.

The patients included were the patients who presented with abdominal pain and diagnosed to have peritonitis.

INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria

1. All the patients referred to or admitted with an acute abdomen and diagnosed to have peritonitis.

Exclusion criteria

1. Patient who do not give consent or do not fit in the study criteria.
2. Pediatric Patients will be excluded

Result & Analysis

The overall mortality in the present study was 22%. MPI scores of ≤ 26, and > 26 had a mortality of 2.96 and 68.75% respectively. MPI score of 26 had highest sensitivity of 92.09% and specificity of 90.43% in predicting mortality. MPI score was higher in patients with organ failure and also mortality rate also were higher in this group of patients where mean MPI score for patients with organ failure was 26.54 while the patients not having organ failure had mean MPI score of 15.54.

Conclusion

MPI is disease specific, easy scoring system for predicting the mortality in patients with secondary peritonitis. Increasing scores are associated with poorer prognosis, needs intensive management and hence it should be used routinely in clinical practice

Keywords: Predictor, Scoring, Sepsis

TABLE OF CONTENTS

LIST OF TABLES

LIST OF GRAPHS

INTRODUCTION

1 Introduction

Generalized peritonitis is a much of the time deadly condition. It keeps on being one of the significant issues going up against doctors, specialists and their patients all through the world. Until the finish of the most recent century, peritonitis was dealt with restoratively with a mortality of 90%.[1]

In 1926, Krishner demonstrated that the mortality of peritonitis could be diminished by strict execution of surgical standards, and the death rate dropped to underneath half. From that point forward, in spite of countless advances in surgical aptitudes, antimicrobial specialists and strong care, the mortality of peritonitis stays high and is by and by detailed as in the vicinity of 13 and 43%.[2]

The visualization and result of peritonitis rely on the connection of many elements, including understanding related components, infection particular variables, and demonstrative and remedial mediations. Sorting patients into various hazard groups would help guess the result, select patients for serious care and decide agent chance, in this manner picking the idea of the agent strategy, e.g. harm control versus conclusive strategy.

Intense summed up peritonitis from gastrointestinal empty viscous perforation is a conceivably dangerous condition. The anticipation of peritonitis stays poor in spite of advancement in conclusion and administration. Early distinguishing proof of patients with extreme peritonitis may help in choosing patients for forceful surgical approach [3-5]. Reviewing the seriousness of intense peritonitis has aided no little path in basic leadership and has enhanced treatment in the administration of extremely sick patients [6].

Experimentally based hazard appraisal for critical clinical occasions has been to a great degree valuable in assessing new treatments, in checking assets for compelling use and enhancing nature of care [7,8].

The anticipation of peritonitis and intra-abdominal sepsis, especially when multi-organ dysfunction creates, stays poor in spite of enhancements in finding and surgical and therapeutic administration of this condition. Early and target arrangement of the seriousness of peritonitis may help in choosing patients for forceful surgical approach [9-77]. A few scoring frameworks have been created for this reason, for example:

- Acute Physiology and Chronic Health Evaluation (APACHE) II score (takes into consideration 12 physiological variables)[12] ,
- Sepsis Severity Score (SSS), Ranson score, Imrie score, and Mannheim Peritonitis Index (MPI) and
- Simplified Acute Physiology Score (SAPS)

The MPI takes into account various characteristics like age of the patient, gender, duration of peritonitis,organ failure, cancer, involvement of colon, extent of spread and character of the peritoneal fluid. This score was initially created by discriminant investigation of information from 1253 patients with peritonitis.[13] It gives off an impression of being more reasonable than other scoring frameworks, for example, the APACHE II,[14] which is tedious and might be difficult to apply in the setting of intra-stomach sepsis.[14,15] Also, in a multicenter investigation of 2003 patients, the MPI had a satisfactory specificity and sensitivity.[16]

Patients with a score surpassing 26 were characterized as having a high death rate [17] The Mannheim Peritonitis Index (MPI) is a score, which has a decent exactness and gives a simple approach to deal with patients with peritonitis [18]. There are no distributed Indian investigations to survey the legitimacy of this scoring framework.

The present study was performed to predict outcome of patients with peritonitis using the MPI.

REVIEW OF LITERATURE

2 Review of Literature

Though the terms - peritonitis, intra-abdominal contamination, and abdominal sepsis are not synonymous, they are usedto characterize comparable clinical characteristics of the patient. Peritonitis is an inflammatory procedure of the peritoneum caused by an irritant or agent, for example, bacteria, virus, fungi, drugs, granulomas, and foreign bodies . Intra-abdominal disease is characterized as the nearby complications that happen due to peritonitis. Intra-abdominal sepsis is a systemic indication of peritoneal irritation which is extreme. [19-21]

“The clinical range of peritonitis may be grouped as essential, auxiliary, or tertiary peritonitisdepending on the pathogenesis of its cause.
A major complication in peritonitis is the development of an abscess, a condition which is developed by the falling off of the remaining infectious products which have remained in the abdominal cavity despite all treatment.”. [19-21]

“The mortality of an intra-peritoneal contamination in the mid 1900s was near 90%. Kishner et al presented the fundamental standards of surgery in intra-abdominal contaminations, which are

- Disposal of the septic foci,
- Expulsion of necrotic tissue, and
- Waste of purulent material.

By the 1930s, mortality had been lessened to half and with the introduction of antibiotics in the medical field, the mortality kept on decreasing.

In the mid 1970s, cephalosporins were beginning to be used, and their use led to a further decrease in the mortality to fewer than30-40 %.

Later, further advances were made in understanding the physiology and support of the cardiopulmonary systemand the Intensive Care Unit, and also the rational use of medications,helped in balancing out mortality at around thirty percentage.” [19,22]

There is no discussion in regards to the standard treatment. The standard management includesthe control of the source of contamination and intra-abdominal lavage.But in patients who have advanced peritonitis, a single operation may not remove the source.
In contrast to that, there are controversies regarding the frequency and the repetition of laparotomies and the management of open and infected wounds.
The reduction in the mortality below 20 % has been due to more antibiotic drugs and better management and understanding of the role of damage control and prevention of intra abdominal compartment syndrome.[23-33]

“The peritoneum is a solitary layer of mesothelial cells on a basal membrane and a bed of conjunctive tissue which is formed by fat cells, macrophages, fibroblasts, lymphocytes and other cellular tissues with some collagen fibres. The peritoneum covers the abdominal cavity by forming into the parietal and visceral peritoneum.

The peritoneum has an average surface area of around 1.7 m^2 and has a 1 m^2 area of interchange surfacewhich acts as a semi-permeable barrier for water and solutes. It is sterile normally, and it contains 50 mL of yellow liquid, which contains a couple of macrophages, mesothelial cells for the most part and lymphocytes. The bigger particles are eleminated through the bigger holes that exist between the specific mesothelial cells that cover the lymphatic channels on the diaphragmatic surface of the peritoneal cavity. These intracellular openings relate to fenestrations of the basal layer, and together they drain into the diaphragmatic lymphatic drainage systemand are called "lakes" or "lagoons."

The reabsorption of bacteria or other microscopic particles occur only in the sub-diaphragmatic peritoneal surface due to numerous channels, as many lymphatic vessels are present in the underlying area. Due to changes in the diaphragmatic shape and the intra abdominal pressure, these diaphragmatic lacuna change their size, varying from 8 upto 12 microns.

The intraperitoneal fluid and exudates continuously circulate within the peritoneal cavity due to positioning and action of gravity, and also to the sub-phrenic spaces due to the contractions of the diaphragm. Its acts like a 'suction pump' and this is the most important mechanism of defence of the peritoneum and the clensing of the peritoneal cavity. [19,22].

A study showed that on inoculating the peritoneum cavity of dogs with bacteria, the bacteria were seen in the thoracic duct in 6 min and in the main blood stream within 12 min. This is how the peritoneum is protected. But after the saturation of all these spaces, if the bacteremia continues, bacteremia can occur. If the host is healthy or if the bacterial load is less, this will resolve spontaneously without any interventions needed and without complications. But if the host is not healthy or there is increased bacterial load, this will cause a cascade of reactions, ultimately leading to sepsis and peritonitis. [34,35].

There is physical contact of the organisms with the peritoneal surface. This leads to a series of events, ultimately activating the humoral and cellular cells and an inflammatory reaction which releases phagocytes in the cavity. There is hyperemia as well so as to deliver these cells faster to the infection site.

- Initially – macrophages are present
- Within 2 – 4 hours, neutrophils are predominant and last upto 72 hours

This leads to the release of other inflammatory cells and causes more local inflammation.

Also, the capsule polysaccharides of the gm neg entero bacilli aggravate this inflammatory reaction.
The inflammation seen during peritonitis is because of the combined effect of all these factors. [36,37].

All this leads to the generation of fibrin. This creates a mesh in the abdominal cavity which traps the bacteria within it. It also reduces the reabsorption of the peritoneal fluid so there is collection of bacteria and inflammatory filled fluid. This is the initial step towards the development of an abscess. To further help in delivering the inflammatory mediators, the omentum migrates towards the inflammatory site. This also helps in formation of abscess. The most common location for abscess is sub-phrenic.

These processes, though they help in the clearance of bacteria, they are also potentially dangerous and may cause life-threatening complications.
When the bacteria escape the peritoneum through the sub-diaphragmatic gaps and enter the systemic circulation, they might cause generalized sepsis if the bacterial load is more and might even lead to death.
The release of inflammatory cells in the exudates, cause displacement of fluids and proteins in the extracellular compartment, which might cause hypovolemia and even shock.

Furthermore, severe bacteremia in peritonitis then activates the catecholamines and steroid hormones and also ADH. This, in addition to hypovolemia caused earlier due to the exudates, causes a decline in the cardiac preload and increases the peripheral vascular resistance. This causes profound damage to the body and all cells are affected [38-40].”

2.1 Classification of Intra-abdominal Infection

2.1.1 Primary Peritonitis

Primary peritonitis is an irritation of the peritoneum by an extra peritoneal source, mainly by the hematogenous transport of the bacteria. Primary peritonitis is mainly caused due to suppressed defense mechanisms of the host. In patients who have cirrhosis or nephrosis, it may be life taking. A single organism usually causes primary peritonitis:

Commonly E. Coli (70%), gram positive cocci (10-20%) and anaerobes (10%)

Most of the times, this is treated with antibiotics. A surgery is rarely needed, but if needed it usually is due to purulent discharge or abscess but the other organs are intact. The histology of which usually reveals a single organism. [19,41]

2.1.2 Secondary Peritonitis

This is usually due to disruption in the integrity of the GI Tract, urogenital tract or other organs. This is mainly due to inflammation. Due to this, the flora of the GI tract gets into contact with the peritoneal cavity and thus begins a cascade of reactions.

Secondary peritonitis is also classified as:

Acute peritonitis due to perforation,

Post traumatic peritonitis,

Or post operative peritonitis.

2.1.3 Acute Peritonitis after Perforation:

This is the most common type of acute intra-abdominal peritonitis. Almost 80% of cases result from the GI tract, mainly intestines due to necrosis [19-22].

Common precipitating factors are typhoid fever and intestinal obstruction. In typhoid fever, there is development of intestinal ulcers and these ulcers perforate and cause peritonitis. In intestinal obstruction, mainly due to paralytic ileus, there is mesenteric ischemia. This leads to perforation and ultimately

peritonitis. Appendicitis is also another factors causing it. Usually, there is localized peritonitis in perforated appendix. This, if kept untreated for a long time, may transform into generalized peritonitis.

Other factors include perforation of the colon by cancer, incarcerated hernia, intussusceptions or necrotic pancreas.

2.1.4 Post Operative Peritonitis

Incidence of post operative peritonitis is 1 – 20 % of all patients undergoing laparotomy. The most important factor in it is the reason for laparotomy.Most common among all factors is anastomotic site leak or failure.There is leakage of the infected intestinal contents and proteolytic enzymes in the peritoneal cavity which causes inflammation.As the symptoms are diagnosed late, mostly after 5^{th}postoperative day, there is delay in the diagnosis and so there is very high mortality.The severity depends on the site and the magnitude of the leak. The bigger the leak, there is more reaction. A retroperitoneal leak is more difficult to see or repair as compared to a leak in the colon that can be easily externalized.

Sometimes, the surgeon is not able to completely remove the primary focus of the sepsis. In that case, sometimes the peritoneum is not able to guard it and it may flare up another reaction of peritonitis. [19,20,42]

2.1.5 Post Traumatic Peritonitis

Peritonitis in trauma patients may happen due tosubconscious and un-intentional acts, for example, mesenteric tear,which causes a loss of blood supply to the supplying colon and development of ischemia, necrosis and ultimately leading to perforation. This sort of disease is generally as a result of the postponement in finding, particularly in patients who have different and multiple wounds orin trauma patients with brain damage. Patients with firearm or injury by a sharp weapon are usually worked upon quickly. In such patients, the time between the injury and the operation matters most. A study showed

that only one-third patients with such kind of injury developed sepsis or peritonitis and required antibiotic for further control.[43-45].

2.1.6 Tertiary Peritonitis

Tertiary peritonitis is a persistant or recurrent peritonitis or intra-abdominal infection, occurring after an apparently standard treatment of a primary / secondary peritonitis.

The standard treatment of this type of peritonitis comprises of depleting the septic foci and to expel the necrotic material out of the body and to keep the reaccumulation of discharge by giving anti-toxin drugs from 5 to 7 days. In the event that, having finished satisfactory surgical and anti-toxin treatment, the contamination holds on or repeats following 48 hours, at that point it can be considered as a patient having tertiary peritonitis. Moreover, the term tertiary or recurrent peritonitis may likewise be utilized when there is persistence of infection and peritonitis even after third intervention for previous secondary peritonitis. That may have been managed by previous planned or multiple stage laparotomy. The microbiology of this disease is described by low virulence organisms or by sterile peritonitis. Continuous organ brokenness ought to demonstrate insufficient waste or unidentified septic foci. This is seen more commonly with patients who are immunocompromized like cancer of=r HIV patients. This patient has a hyperdynamic cardiovascular state, may have fever and the condition may be life threatening. On operation, the intra op findings usually show diffuse or no exudates with thin fibrin membranes, no abscess and clear peritoneal fluid.Histopathology reveals coagulase negative Staphylococcus, enterococcus, Pseudomonas, yeast, and Enterobacter species as common organisms among others. The septic foci are once in a while agreeable to percutaneous waste, and they are in troublesome areas inside the guts. The surgeon needs to look at the other signs of systemic sepsis like tachycardia, hypotension and fever and thus his approach should be more vigilant. The unapparentclear discharge may be misleading. If this is

overlooked, multi organ involvement may occur and may result in death[46-50].

The treatment of this tertiary peritonitis ought to be done in the ICU, and ought to be performed by a multidisciplinary group. The patient will require metabolic, hemodynamic and detailed support, and prompt hemodynamic and respiratory care; early active management is perfect. A perfect and opportune choice to alter anti-infection agents as per the latest culture reports of blood and of the aspirate. The choice for on-request re-laparotomy ought to be made ahead of time, and choices for reoperation should be made by looking into all the factors but not be unnecessarily postponed. Antimicrobial treatment should not surpass 14 days, aside from in patients who have other opportunistic diseases [51-55].

2.1.7 Diagnosis

The diagnosis of peritonitis is a clinical conclusion, constructed generally in light of history and physical examination. The primary manifestation in all cases is abdominal pain, which may be blunt or sharp. It may increase on movement. The lion's share of patients lie still, with their knees twisted and the head raised; these moves lessen the strain of the abdominalwall and ease the torment. Anorexia, queasiness, and regurgitating are other side effects. By the by, contingent upon the etiology of the peritonitis and of their time of appearance, the indications can differ. The patients usually have some underlying chronic illness and may have fever and tachycardia. Patients with septic shock might present with hypothermia. Patients have increased cardiac output and low PVR.

Hallmark of peritonitis is – pain to palpation, to superficial as well as deep touch.

At first there is deliberate guarding; therefore the strong divider experiences an automatic and serious fit. Localized peritonitis produces more pain on touching the site. This may be helpful in the diagnosis of local irritation. Rectal examination, albeit crucial in the physical examination, once in a while situates toward the starting point of the peritonitis. In the principal hours of peritoneal bothering the agony might be exceptional, yet to the degree that time slips by, the torment turns out to be more deceptive and more hard to survey. A high record of doubt might be the distinction in making an early instead of a late conclusion with critical outcomes. The patient may have a raised WBC count(>11,000 cells/mL). Leucopenia proposes summed up sepsis and is related with a poor anticipation. Blood picture might be typical, however in genuine cases it might show serious lack of hydration, for example, expanded blood urea nitrogen (BUN) and hypernatremia. Metabolic acidosis helps in further confirmation of the proposed diagnosis. A urinalysis is imperative to discount urinary tract disease, pyelonephritis, and nephrolithiasis. Plain film of the mid-region is not requested routinely. Whenever acquired, be that as it may, it could uncover crippled ileus with entrail distension or air liquid levels. An upright chest radiograph is helpful if punctured viscera is suspected. Free air in the belly may happen in 80% of instances of duodenal ulcer aperture, yet it is seen with less recurrence when there is colon, little entrail, or intra-peritoneal rectum puncturing" [19,55– 58].

"At the point when the finding is made clinically, a stomach CT just defers the surgical intercession. By the by, a stomach CT can be helpful in for suspected intermittent or undrained contamination in the postoperative period. Velmahos and partners [59] prescribe acquiring a stomach CT in fundamentally sick post-injury patients who have sepsis of obscure cause. The CT as a rule helps in directing treatment in two of each three cases. Stomach ultrasound (US) may likewise help in working up patients who have postoperative septic intricacies. Contingent upon the administrator, liquid accumulation might be recognized; be that as it may, this finding independent from anyone else might be

nonspecific. The best favorable position of US is that it should be possible at the bedside. Inside circles might be recognized by their peristalsis, and bedside percutaneous seepage might be done now and again, subsequently encouraging the acquisition of tests for societies. Go and colleagues [60] played out a similar report to approve the utilization of US versus CT in patients who had postoperative intra-stomach sepsis. They demonstrated that CT is the system of decision in these patients, and that US may utilized as a part of chosen cases".

2.1.8 Diagnostic Peritoneal Lavage

Diagnostic peritoneal lavage (DPL) is a reliable technique for the diagnosis of generalized peritonitis. This is helpful in patients who do not have the typical signs or symptoms or who have altered consciousness due to some brain injury.
A positive D.P.L.: > 500 leukocytes/mL is indicative of peritonitis.
A drawback of this is patients on steroids or in immune-compromised state.

Laparoscopy has also been used, and there have been late reports about its viability. But this procedure also has its limits. It cannot be conclusive in patients who have other co-morbid conditions and in some patients the visualization of the cavity may be difficult due to gross distension or previous scars.

In the end, the best method in the diagnosis is exploratory laparotomy. The dangers of an additional surgery versus the advantages of getting an analysis are choices which the surgeon has to make depending on the other conditions.
The clinical evaluation outweighs other diagnostic tests that may give false impressions and inconclusive end results. One must keep away from all other unimportant things and do not postpone the diagnosis and treatment of such patients that will at last bargain the patient's life and will affect the capacity to effectively revive the patient after surgery.

2.1.9 Treatment

“The administration of serious peritonitis is mind boggling and requires a multidisciplinary approach. The specialists and intensivists must cooperate with experts in dietary help, individual respiratory treatment, irresistible sickness, and radiology. The utilization of standard conventions for revival and hemodynamic/ventilatory help to encourage general administration ought to positively affect result. The creators have built up a strict surgical administration convention with aggressive interventional approach to eradicate septic foci in the abdomen (AAST)”.

“At the point when the choice for re-investigation is made in view of patient disintegration or inability to flourish related with early organ brokenness, a forceful preoperative revival is actualized, incorporating administration with mechanical ventilation with low tidal volumes (6– 8 mL/kg), situation of a pneumonic corridor catheter (PAC), and sensible liquid revival. Elderly patients require more forceful heart checking, and may require perioperative help to keep up a sufficient cardiovascular yield. These patients may likewise require checking of intra-stomach strain to avoid and recognize stomach compartment disorder. Once the patient is satisfactorily revived, he is taken to the operating room”.

“A few scores have been proposed to recognize hazard elements of prescience because of perforative peritonitis mortality; as often as possible they appear to be mind boggling to figure or hard to use outside concentrated care units”.

Fundamental score-frameworks announced are the Acute Physiology and Chronic Health Evaluation score (APACHE II), Simplified Acute Phisiology Score (SAPS), Sepsis Severity Score (WSES) (7), Ranson Score, Peritonitis Index Altona (PIA), Sepsis Score and Physiological and Operative seriousness Score for list of Mortality and Morbidity (POSSUM), Mannheim Peritonitis Index (MPI) (61,62).

APACHE II was intended to gauge the seriousness of ailment for adult patients admitted to intensive care units. It has not been approved for age under 16.

This scoring index is utilized as a part of numerous ways which include:
A few techniques or some drug is just given to patients with a specific APACHE II score

APACHE II score can be utilized to depict the morbidity of a patient when contrasting the outcome with different patients, averaged for groups of patients keeping in mind the end goal to anticipated mortalities are found to determine the group's morbidity.

Despite the fact that more up to date scoring frameworks, for example, SAPS II, have supplanted APACHE II in many spots, APACHE II keeps on being utilized widely on the grounds that so much documentation depends on it.

The point score is calculated from a patient's age and 12 routine physiologicalmeasurements:

1. AaDO2 or PaO2 (depending on FiO2)
2. Temperature (rectal)
3. Mean arterial pressure
4. pH arterial
5. Heart rate
6. Respiratory rate
7. Sodium (serum)
8. Potassium (serum)
9. Creatinine
10. Hematocrit
11. White blood cell count
12. Glasgow Coma Scale

APACHE score is viewed as the best score-framework in prognostic assessment. Broadly utilized as a part of crisis, it has great relationship with perforative peritonitis mortality. It doesn't assess kind of peritonitis and reason for aperture. Its utilization is recommended in ICU in 24h from damage (63-65). MPI rather accomplishes the best in dependability on dangers' assessment, permitting the expectation of the individual guess of patients with peritonitis (66,67).

It was expounded in 1980s out of a German review concentrate and after that approved. It gathers information from clinical examination and surgical proof, and it is valuable into foresee when to perform "forceful treatment" and serious care checking.

In MPI are taken into account 8 variables: age, sex, organ failure, diagnosis of carcinoma, preoperative duration of peritonitis, origin of sepsis, peritonitis extension, characteristics of exudates. [67,68]

G.Salamone et al did retrospective study consider on 104 patients admitted and operated for "Intense Secondary Peritonitis because of instinctive perforation". MPI was scored. In investigation they wanted to show viability of MPI and the likelihood to consider more established age a free prognostic factor. In the study they found mortality was 25.96%. Most noteworthy sensitivity and specificity for the MPI score as an indicator of mortality was at the score of 20. MPI score of <16 had 0.15 times bring down danger of mortality contrasted with patients with MPI score 17 – 21 and 0.61 lower than patients with MPI >22. Patients with MPI score 17– 21 had 0.46 times bring down danger of mortality contrasted with patients with MPI score >21. In the gathering of patients with MPI score of >20 the death rate was 48.5% for patients more seasoned than 80 years of age and 12.1% for more youthful patients ($p < 0.005$); in the gathering with MPI score of < 20 death rate was separately 8.4% and 1.4% ($p < 0.005$).[69]

Muralidhar et al did a planned investigation of 50 patients admitted and operated for peritonitis in JSS Medical College Hospital. The organized scoring framework i.e. MPI was applied alongside other clinical and biochemical parameters recorded in pre-organized proforma. They found that the general mortality and morbidity was 14% and 38% individually. MPI scores of ≤ 20, 21-29, and ≥ 30 had a mortality of 5%, 14%, and half individually. MPI score of 25 had most noteworthy sensitivity of 72.09% and specificity of 71.43% in foreseeing mortality, 80.65% sensitivity and 57.89% specificity for morbidity. MPI score of > 25 were related with 6.45 times higher danger of mortality (p=0.03), 5.72 times higher danger of dismalness (p=0.005) contrasted with patients with MPI score ≤25. They concluded MPI is disease specific, simple scoring framework for anticipating the mortality in patients with optional peritonitis. Expanding scores are related with poorer visualization, needs escalated administration and subsequently it ought to be utilized routinely in clinical practice.[70]

"M.M.Correia et al enrolled Eighty-nine patients with disease were chosen for seconadary peritonitis investigation. Their ages extended from 0 to 89 years, mean of 58,4 (SD ±16.1) years. Sixty five patients were men (73.3%) and 24 female (26.7%). Among them just 8 were pre-operative and all others were postoperative. Thirty eight (42,7%) were submitted to peritoneostomy. The vast majority of the fundamental cancer disease were gastrointestinal. The most incessant determination were colorectal 34/89 (38.2%), gastric and esophageal tumor 19/89 (21.4%). The hospitalization stay went from 4 to 131 days, middle of 36.2 days. The general death rate was 61.8% (55/89), 71.1% (27/38) in those with peritoneostomy and 54.9% (28/51) in those without peritoneostomy (p = 0.12)".

"The preoperative span of peritonitis was longer than 24 hours in 65.5%. A purulent exudate was seen in 63.3% and summed up diffuse peritonitis

happened in 62.2% of the patients. In 55.6% of cases the peritonitis had a non-colonic sepsis birthplace and organ disappointment was seen in 48.9% of cases. Correlation of the MPI factors in the two groups (survival and postoperative demise) demonstrated that lone organ disappointment, age more seasoned than 50 years and diffuse summed up peritonitis achieved measurable criticalness. Preoperative peritonitis term longer than 24 hours was marginally more successive among patients who passed on than among survivors, yet the distinction was not noteworthy (P = 0.06)".

"The MPI scores shifted from 5 to 47, with a mean estimation of 31.7 and 24.5, individually in those with or without peritoneostomy ($p < 0.001$). The death rate expanded relatively as per the MPI score. Direct connection between's the record score and the death rate in our investigation brought about an incredible relationship coefficient ($r = 0.99$). The affectability and specificity of the list are appeared as a ROC bend in. The zone under the bend (AUC) was 69.5%. The examination of the diverse score cut-focuses demonstrated that with the basic score 21 (equivalent or over) we have the best precision (69.7%) with an affectability of 87.3%. This cut-point missed just 12.7% of passings. The negative prescient estimation of the MPI is 66.7% and the positive predictive value is 70.6%. The mortality rate under score 21 was of 33.3% and equal or over 21 was 70.6% (Odds Ratio = 4.8; 95% CI 1.5 - 15.7; $p = 0.002$)".

"Notash AY et al did a Prospective evaluation of the MPI and MOF score was performed in 80 consecutive patients with peritonitis who underwent uniform surgical treatment. Risk ratios were calculated for the MPI and other patient characteristics. Risk ratio was not calculable for the MOF score. They found Overall in-hospital mortality rate was 17.5%, including 80% of patients with MPI>29. In non-survivors the mean score was 4.8 (SD 1.46) and 33.07 (4.81) for the MOF score and MPI, respectively. Survivors had mean MOF score of 0.28 (0.20) and mean MPI of 19.39(6.68)". [72]

“V.T.Arashy et al did an A prospective, descriptive, transversal and observationalinvestigation was embraced. Both sex were incorporated into the examination with age more than 14 yrs and more seasoned with determination of peritonitis affirmed amid surgery paying little mind to cause. Once the analysis of peritonitis has been affirmed by agent discoveries, the patient was acknowledged in the examination. They found that Of the example of 150 patients, 28 were female(18.7%) and 122 were male(81.3%). Gathering mean age was 41.8 years with a middle of 40 years and a range from 14 years or more. Mean period of survivors were 39.78years, among non survivors, mean age was 53 years .Group mean MPI Score was 18 focuses. Among surviving patients, mean score was 16 points and among nonsurvivors, mean was 27 points. They concluded that Mannheim peritonitis list is ailment particular and a simple scoring framework to foreseeing the mortality in patients with peritonitis because of secondary causes, expanding Mannheim peritonitis record score is straightforwardly corresponding to mortality of the patient.” [73]

Mohammed Faheem Inamdar etal did a clinical, imminent, observational and open investigation led at Vijayanagara Institute of Medical Sciences, Bellary, from January 2010 to December 2010. The information with respect to quiet particulars, analysis, examinations, and surgical strategies is gathered in an exceptionally composed case recording form, they found in study the mean age of patients was 45.72 (SD 14.26) years ranging from 13 to 75 years. The majority of patients (68.6%) belonged to the age group of 31-45 years and most of them (72%) presenting after 24 hours of onset of symptoms. 5.8% out of all the patients with MPI score less than 21 developed wound infection with 0 % mortality and 94.2% of patients being normal.41.4% of patients had morbidity (wound infection) and mortality with MPI score 21 to 27.

Patients with MPI score more than 27 had the highest mortality i.e. 84.2%.

Hence effective scoring is system is required to predict the outcome in peritonitis patients and whether the line of management taken is appropriate or need to be changed.

MANNHEIM'S PERITONITIS INDEX:[7]

Criteria: Tally scores of positive criteria:

- ***A.*** *Organ Failure: 7*
- ***B.*** *Diffuse peritonitis: 6*
- ***C.*** *Age older than 50 years old: 5*
- ***D.*** *Female gender: 5*
- ***E.*** *Malignancy: 4*
- ***F.*** *Non-colonic Sepsis origin: 4*
- ***G.*** *Preoperative duration of peritonitis: 4*
- ***H.*** *Exudate*
    1. *Fecal: 12*
    2. *Cloudy or purulent: 6*
    3. *Clear: 0*

Interpretation:

- ***A.*** *Score 0-5: 0% Mortality*
- ***B.*** *Score 6-13: 20% Mortality*
- ***C.*** *Score 14-21: 13% Mortality*
- ***D.*** *Score 22-29: 26% Mortality*
- ***E.*** *Score 30-39: 64% Mortality*

AIM
&
OBJECTIVES

3 AIM & OBJECTIVES

3.1 AIM

1. To assess the effectiveness of Mannheim Peritonitis Index (MPI) in predicting mortality in patients who presented with features of peritonitis.

3.2 OBJECTIVES

1. To study Prognosis according to Mannheim Peritonitis Index.
2. For Early intervention for those in need according to classification.

MATERIAL
&
METHODS

4 MATERIAL AND METHODS

This was a single centric observational, cross sectional study which was carried out prospectively in the department of the Surgery, DGH, SVDU to assess the effectiveness of Mannheim Peritonitis Index (MPI) in predicting mortality in patients who presented with features of peritonitis from the duration of November 2016 to August 2017 and total there were 50 consecutive patients with the indication of Peritonitis were enrolled.

For the study participation we have enrolled patients of both genders, i.e. male and female and with the age more than 18 years.

Total duration of data collection of the patients was 10 months

Department of Surgery was the study site where this study was carried out

In this study on the basis of following inclusion and exclusion criteria we have enrolled total 50 patients.

4.1 Inclusion Criteria

1. Patients with an acute abdomen and diagnosed to have peritonitis.
2. If patient is illiterate than the patient who can give oral consent and LAR can give written consent in presence of impartial witness.

4.2 Exclusion criteria

1. Do not give voluntary consent or not fit in the inclusion criteria.

4.3 Method of Collection of Data

Patients presenting with acute abdominal pain later diagnosed with peritonitis

were screened for the study. Principal investigator has explained complete PIS from the study title to contact details in case of emergency in the language which patients understand. PI explained the patients along with his or her LAR about voluntarily participation of the patients and also informed that he or she can withdraw his or her consent at any moment of the study.

PI has given sufficient time to patient to ask study related questions and PI also given satisfactory answer to the patients and their relatives.

Then PI took signature of patients on ICF for the confirmation of voluntary participation in the study and PI has also done signature on ICF in presence of LAR and impartial witness (if required).

After signing on ICF, PI checked all inclusion and exclusion criteria. And after confirmed all inclusion and exclusion criteria PI has enrolled patient in the study and then initiate all study related activities.

A detailed examination of patient has been done and all study related variables has been transcribed in pre formed Proforma then all data were transferred into MS Excel for analysis purpose.

4.4 Analysis Plan

SPSS 20 was used for statistical analysis of this study data.

All quantitative data were analyzed by using parametric test where as all qualitative data were analysed by using non parametric test to find significance level.

All data were presented in tabular and graphical presentation and p value <0.05 was considered as significance level.

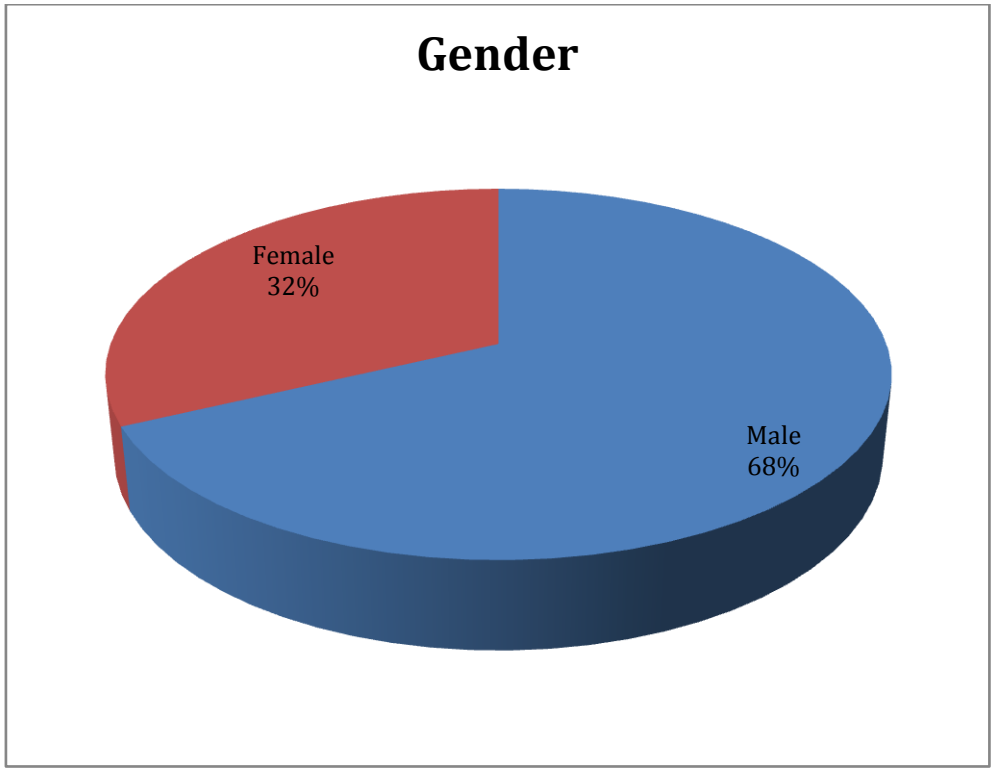
RESULT
&
ANALYSIS

5 Results and Analysis

Table 1 Gender Distribution

Gender	N	%
Male	34	68.00%
Female	16	32.00%
Total	**50**	**100.00%**

Graph 1 Gender Distribution

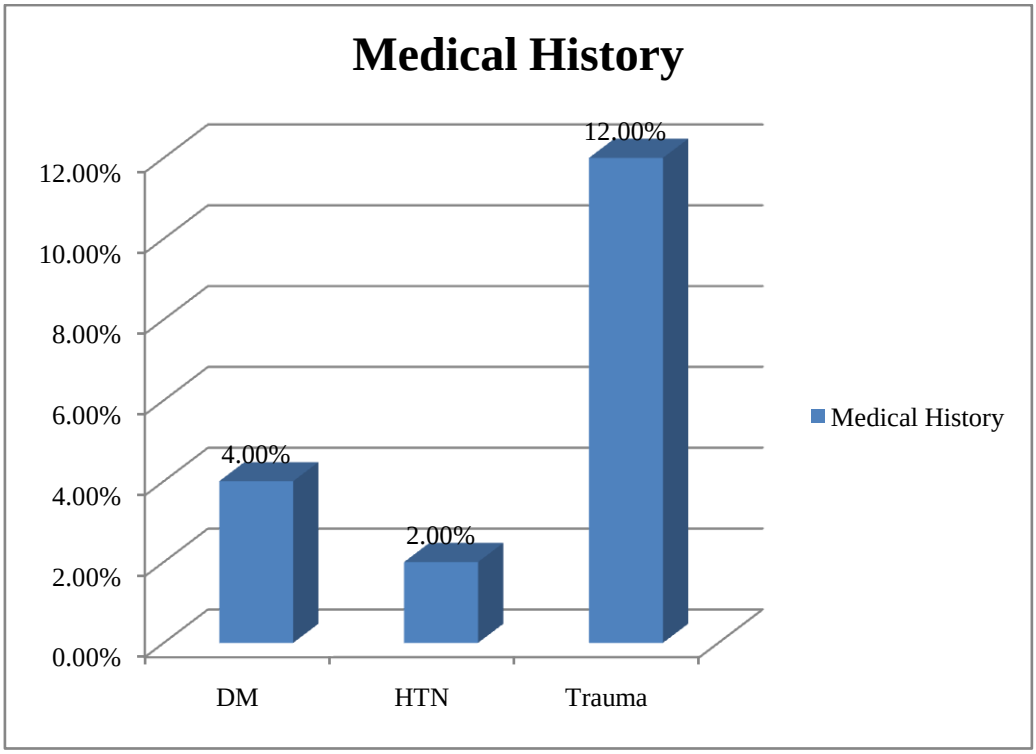


In the present study we have enrolled total 50 patients with peritonitis and out of them 68.00% were male and 32.00% female.

Table 2 Medical History

Medical History	N	%
DM	2	4.00%
HTN	1	2.00%
Trauma	6	12.00%

Graph 2 Medical History

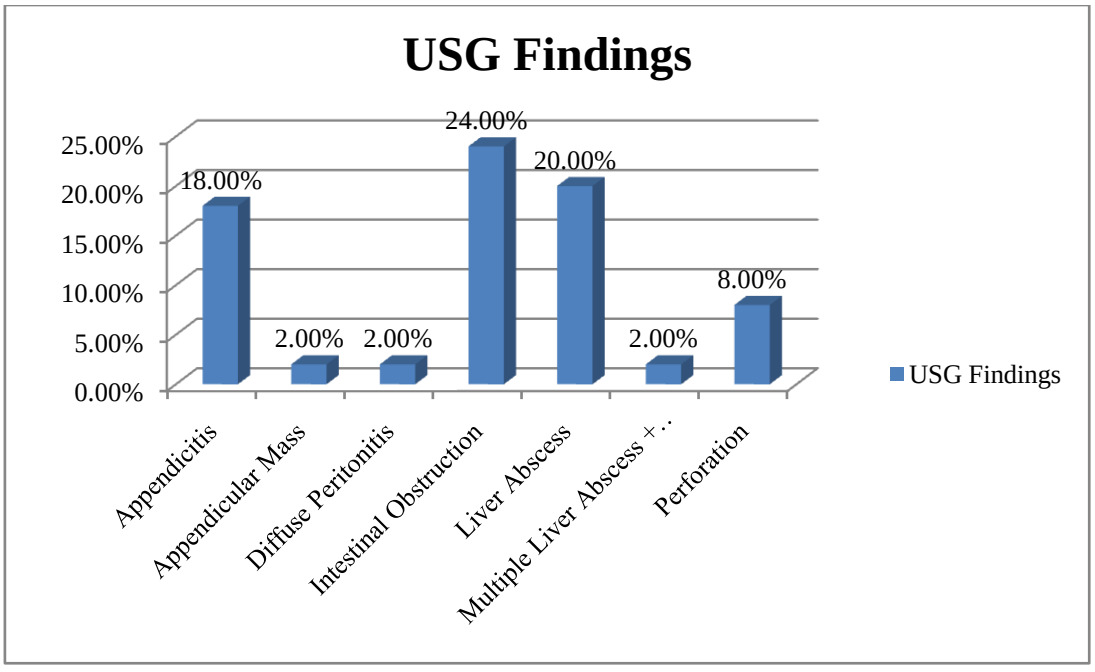


In this study out of 50 patients only nine patients had past medical history. 12.00% patients had Trauma, 2.00% patients had Hypertension and 4.00% patients had Diabetes Mellitus.

Table 3 USG Findings

USG Findings	N	%
Appendicitis	9	18.00%
Appendicular Mass	1	2.00%
Diffuse Peritonitis	1	2.00%
Intestinal Obstruction	16	24.00%
Liver Abscess	10	20.00%
Multiple Liver Abscess + GB Calculi	1	2.00%
Perforation	12	8.00%
Total	**50**	**100.00%**

Graph 3 USG Findings



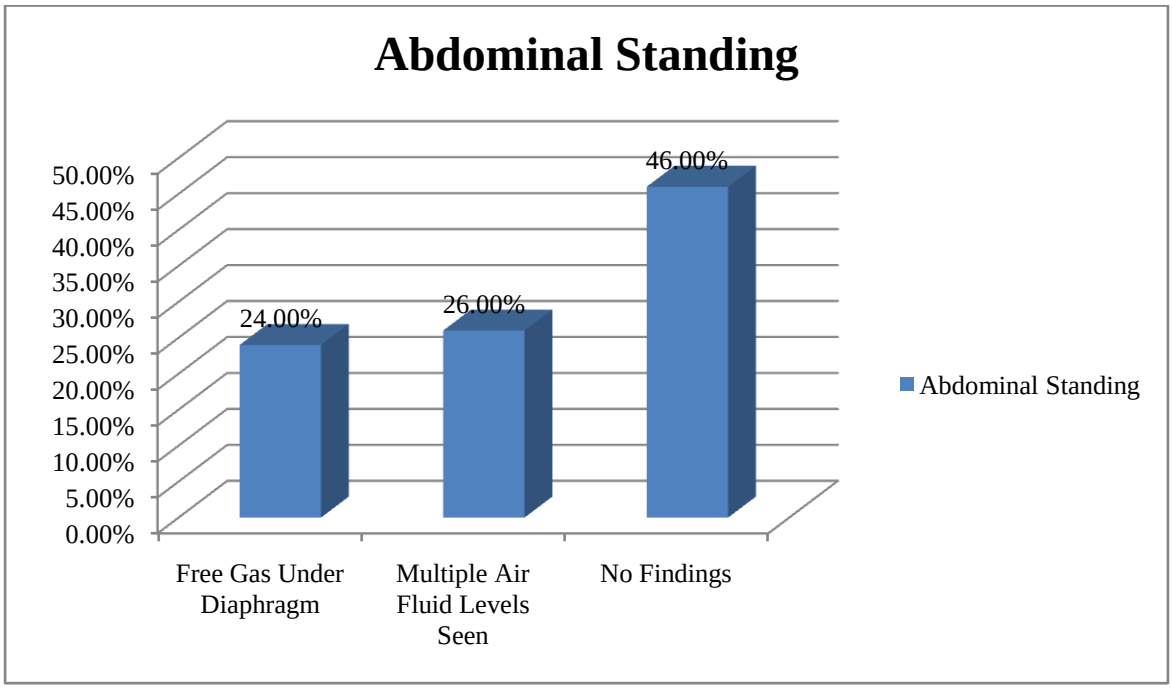
From above graph and table it has been concluded that majority of enrolled patients (24.00%) had Intestinal Obstruction as USG findings followed by

20.00% patients had Liver Abscess, 18.00% had Appendicitis, 8.00% patients had Perforation and 2.00 % patients had Appendicular Mass, Diffuse Peritonitis, Multiple Liver Abscess + GB Calculi respectively.

Table 4 Abdominal Standing

Abdominal Standing	N	%
Free Gas Under Diaphragm	12	24.00%
Multiple Air Fluid Levels Seen	15	26.00%
No Findings	23	46.00%
Total	50	100.00%

Graph 4 Abdominal Standing



In present study out of 50 patients 26.00% patients had Multiple Air Fluid Levels Seen and 24.00% patients had Free Gas under Diaphragm.

Table 5 Blood Parameters

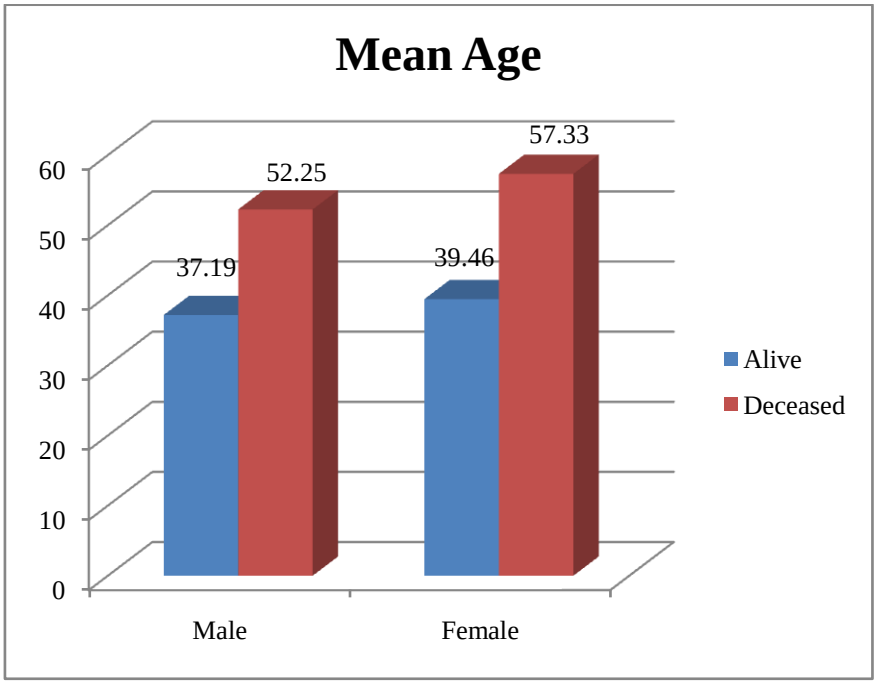
Status		N	Mean	SD	p value
Hb	Alive	39	9.62	1.79	0.339
	Deceased	11	8.91	2.17	
Na	Alive	39	154.51	159.55	0.170
	Deceased	11	118.55	9.88	
K	Alive	39	3.87	1.44	0.098
	Deceased	11	3.18	1.08	
CL	Alive	39	93.74	11.20	0.245
	Deceased	11	88.36	13.47	
WBC	Alive	39	11973.03	4447.64	0.246
	Deceased	11	13772.73	4359.38	
Platelets	Alive	39	210772.74	96582.55	0.418
	Deceased	11	244163.64	122413.14	
Urea	Alive	39	24.26	3.50	0.310
	Deceased	11	31.45	22.28	
Creatinine	Alive	39	0.87	0.41	0.367
	Deceased	11	0.73	0.47	

In present study we have compared all baseline blood parameters between Alive and Deceased patients by using independent t test but we did not find any statistical significant change in mean value of blood parameters between both groups.

Table 6 Mean Age of Alive and Deceased Patients

Status	Male		Female		Total	
	Mean Age	SD	Mean Age	SD	Mean Age	SD
Alive	37.19	12.84	39.46	15.25	37.95	13.53
Deceased	52.25	17.80	57.33	10.69	53.64	15.82

Graph 5 Mean Age of Alive and Deceased Patients

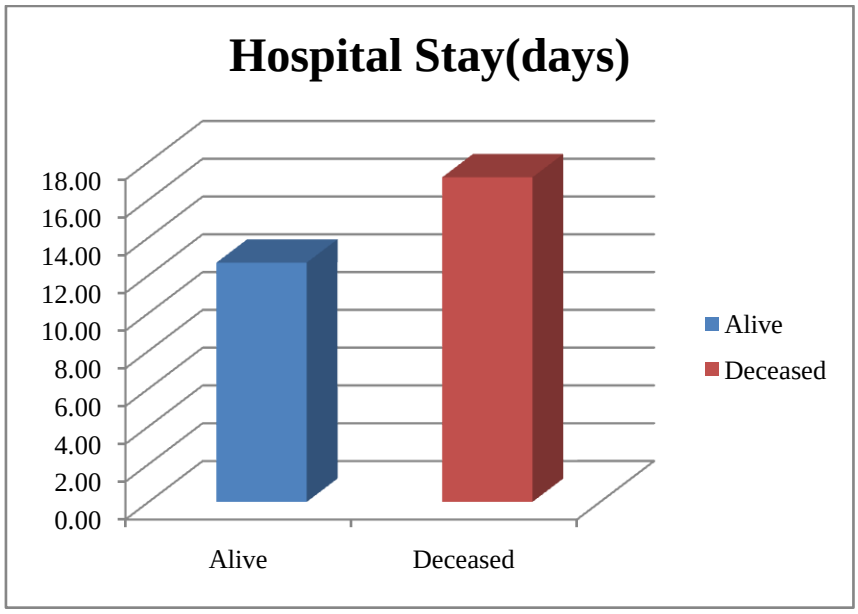


In present study we have found that mean age was higher in deceased patients (53.64±15.82 years) compare to alive patients (37.95±13.53 years). Similarly in deceased patients mean age was higher in both genders compare to alive patients.

Table 7 Mean Hospital Stay and MPI Score in Alive and Deceased Patients

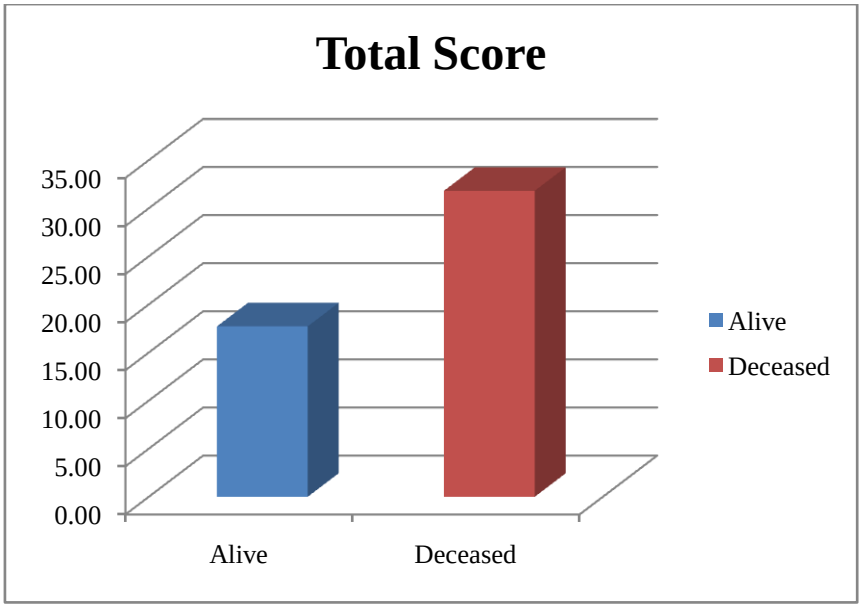
Status		N	Mean	SD	p value
Hospital Stay(days)	Alive	39	12.67	3.020	0.000
	Deceased	11	17.18	1.888	
Total Score	Alive	39	17.72	8.114	0.000
	Deceased	11	31.82	3.970	

Graph 6 Hospital Stay



Mean hospital stay was higher in patients who had MPI score more than 26 (17.40 days) compare to patients who had MPI score less than 26 (12.03 days).

Graph 7 Mean MPI Score



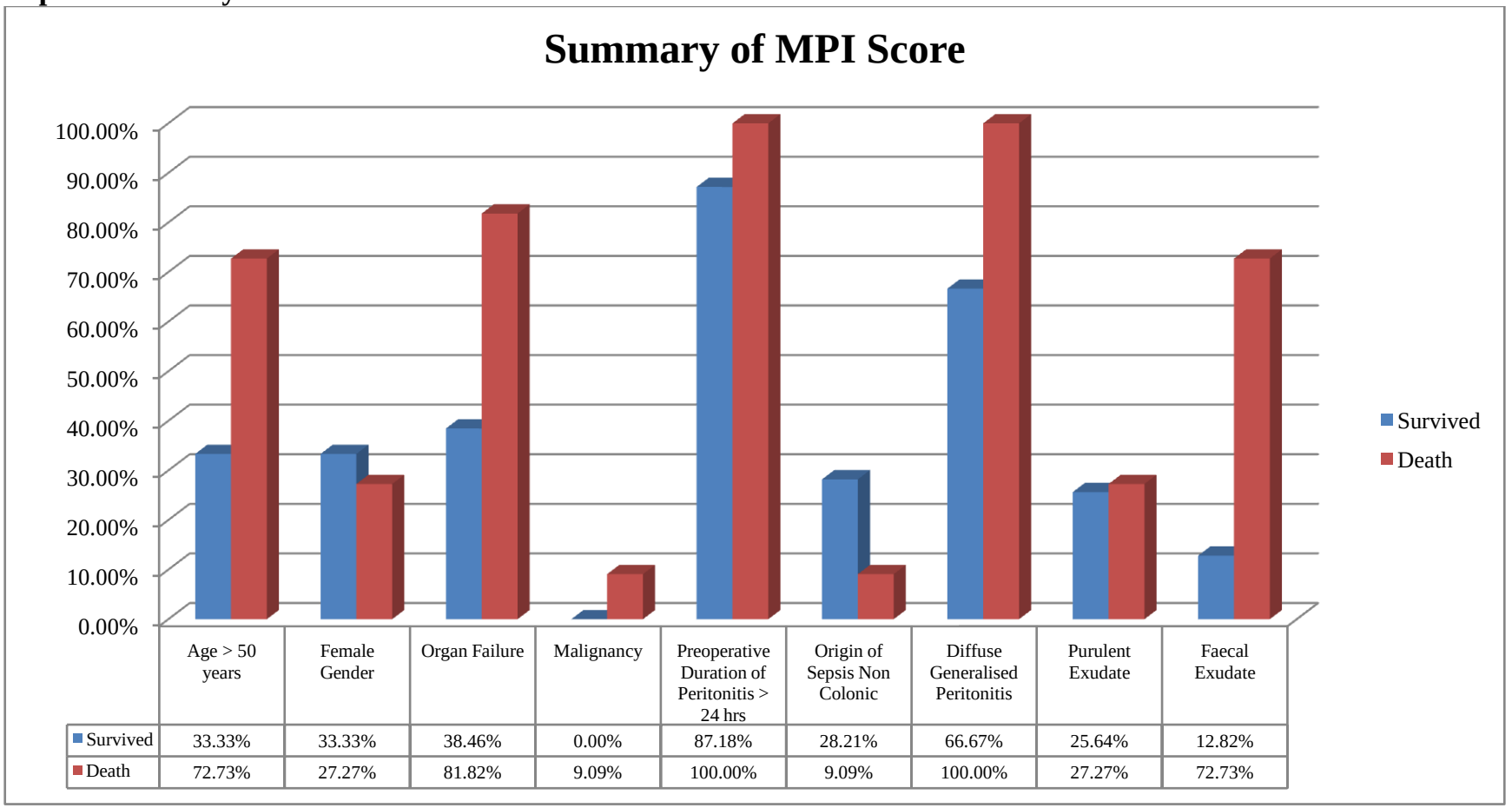
In present study we have compared mean hospital days and mean MPI score between Alive and Deceased patients by using independent t test and we have found that mean hospital stay and MPI was higher in Deceased patients compare to alive patients and which is statistical significant (p value 0.000)

Table 8 Summary of MPI score in Alive and Deceased patients

Summary of MPI	Survived	%	Death	%	Total	p - value
Age (> 50 years) (n)	13	33.33%	8	72.73%	21	0.036
Organ Failure (n)	15	38.46%	9	81.82%	24	0.016
Female Gender (n)	13	33.33%	3	27.27%	16	0.704
Malignancy (n)	0	0.00%	1	9.09%	1	0.220
Preoperative Duration of Peritonitis > 24 hrs (n)	34	87.18%	11	100.00%	45	0.573
Diffuse Generalized Peritonitis (n)	26	66.67%	11	100.00%	37	0.046

Summary of MPI	Survived	%	Death	%	Total	p - value
Origin of Sepsis Non Colonic (n)	11	28.21%	1	9.09%	12	0.257
Purulent Exudate (n)	10	25.64%	3	27.27%	13	0.913
Faecal Exudate (n)	5	12.82%	8	72.73%	13	0.000

Graph 8 Summary of MPI score in Alive and Deceased Patients



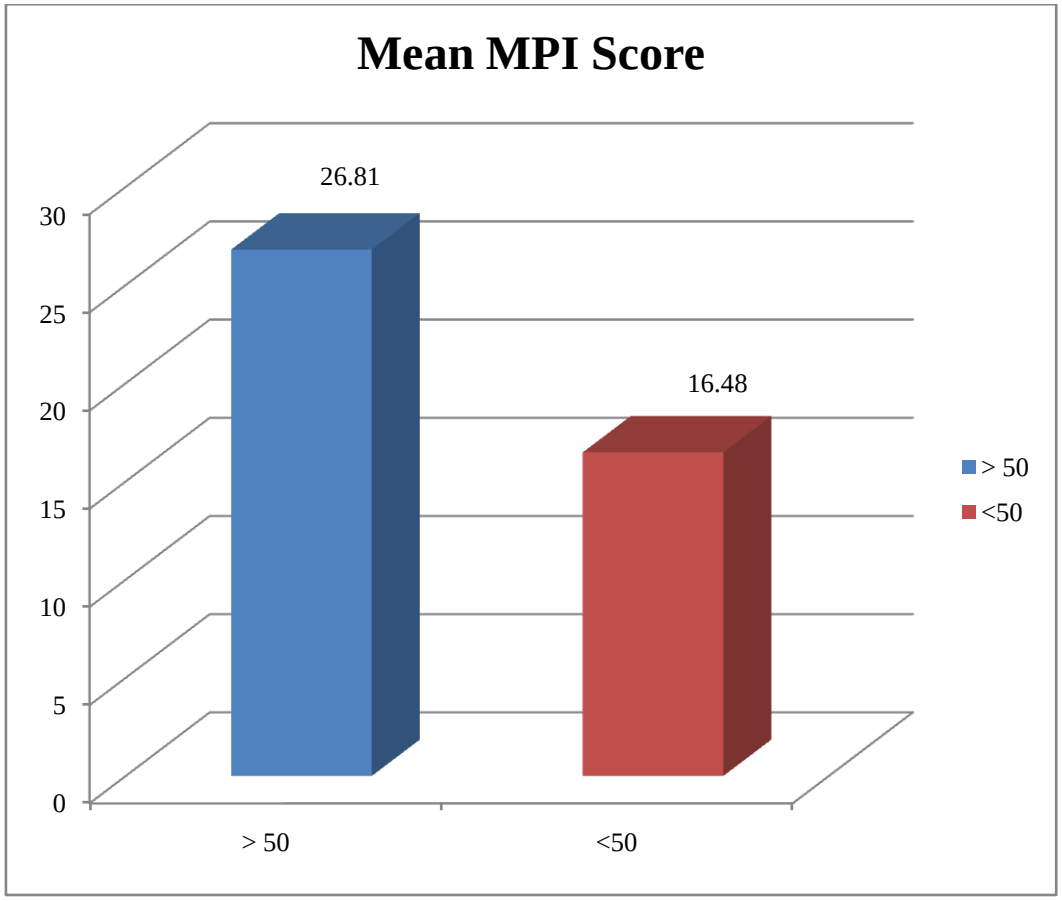
	Age > 50 years	Female Gender	Organ Failure	Malignancy	Preoperative Duration of Peritonitis > 24 hrs	Origin of Sepsis Non Colonic	Diffuse Generalised Peritonitis	Purulent Exudate	Faecal Exudate
Survived	33.33%	33.33%	38.46%	0.00%	87.18%	28.21%	66.67%	25.64%	12.82%
Death	72.73%	27.27%	81.82%	9.09%	100.00%	9.09%	100.00%	27.27%	72.73%

In above table we have found that Age more than 50 years, Organ Failure and Faecal Exudate is associated with death as we have found statistical significant higher number of death if patients fall in these three parameter (p= 0.036,0.016,0.000 respectively)

Table 9 Age and MPI Score

Age	N	Mean MPI Score	SD	p value
> 50	21	26.81	8.27	0.000
<50	29	16.48	7.78	

Graph 9 Age and MPI Score

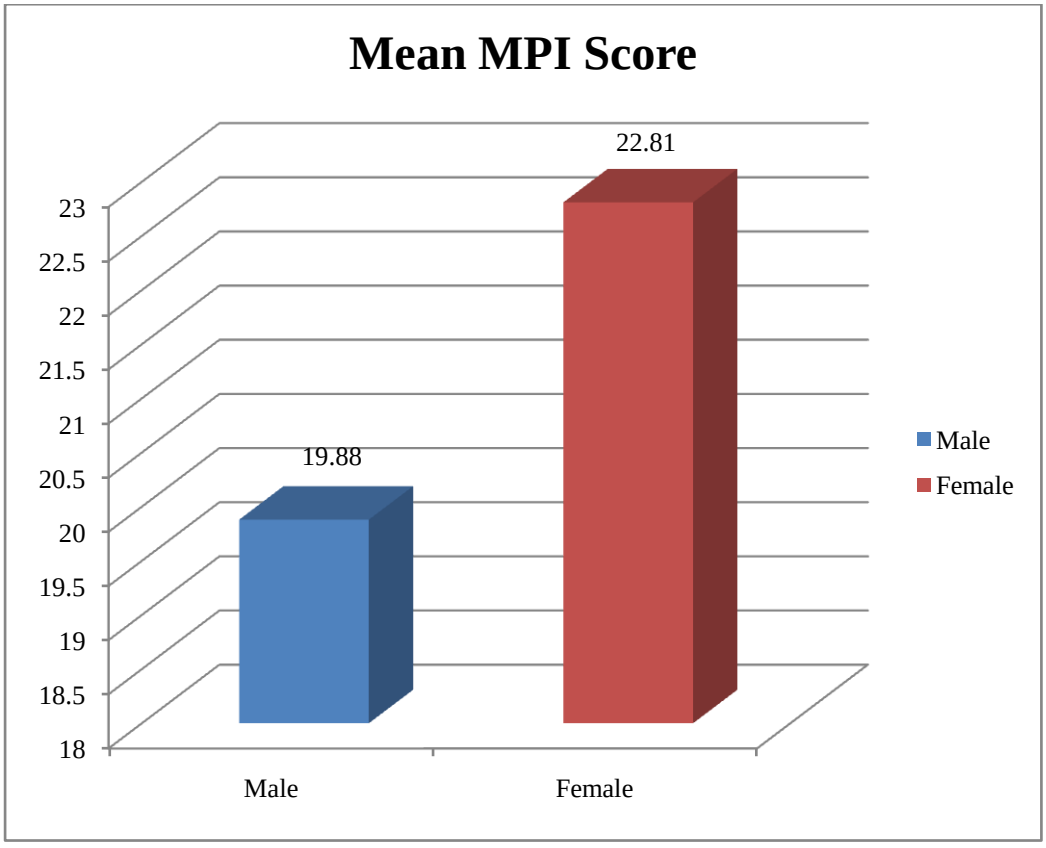


In the present study we have done the comparison of Mean MPI score between patients with more than age 50 years and patients with age less than 50 years by using independent t test and we found there was statistical difference in mean MPI score between both the groups, p value was 0.000.

Table 10 Gender and MPI Score

Gender	N	Mean MPI Score	SD	p value
Male	34	19.88	9.81	0.289
Female	16	22.81	8.54	

Graph 10 Gender and MPI Score



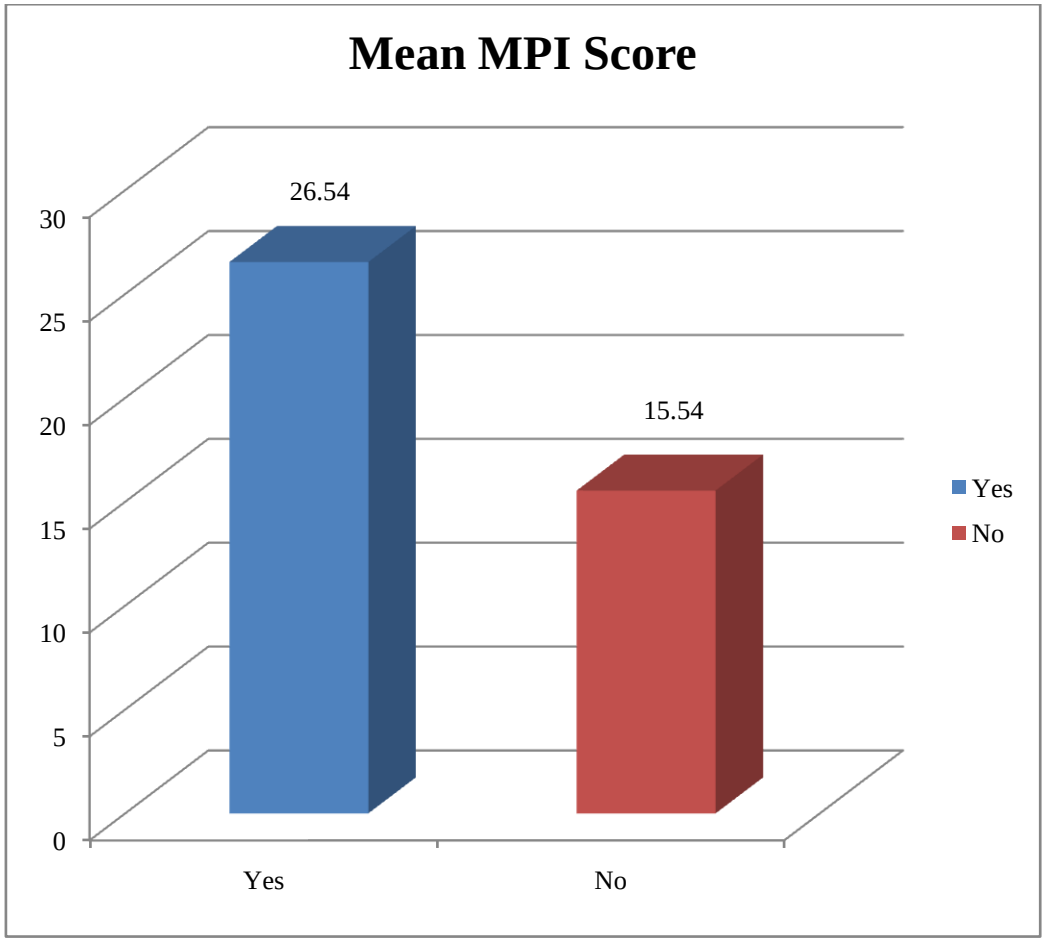
In the present study we have done the comparison of Mean MPI score between both the genders by using independent t test and we found there was no statistical difference in mean MPI score between both the groups, p value was 0.289.

However we found in our study that mean MPI score of male gender was less as compare to female gender, i.e. 19.88±9.81 vs. 22.81±8.54.

Table 11 Organ Failure and MPI Score

Organ Failure	N	Mean MPI Score	SD	p value
Yes	24	26.54	8.81	0.000
No	26	15.54	7.25	

Graph 11 Organ Failure and MPI Score

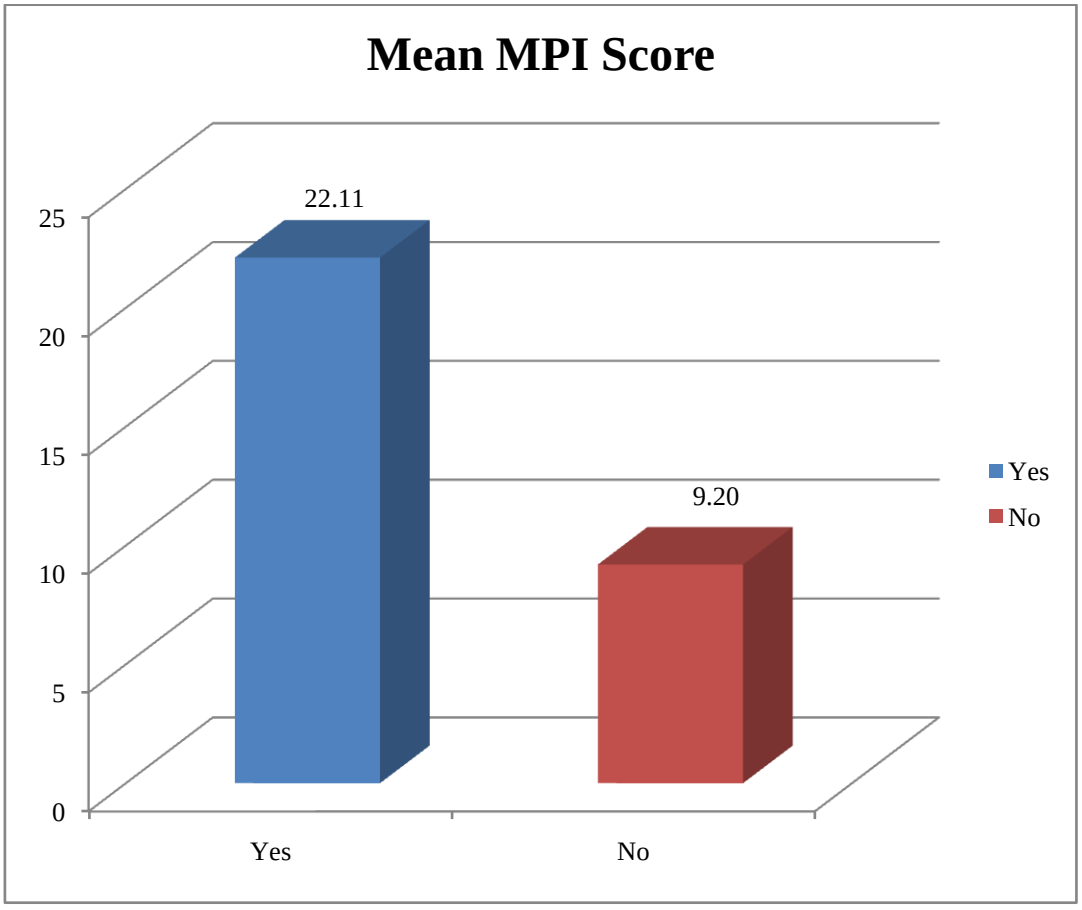


In the present study we have done the comparison of Mean MPI score between both the patients with organ failure (26.54±8.81) and patients without organ failure (15.54±7.54) by using independent t test and we found there was statistical difference in mean MPI score between both the groups, p value was 0.000.

Table 12 Pre operative duration of Peritonitis > 24 Hours and MPI Score

Pre operative duration of Peritonitis > 24 Hours	N	Mean MPI Score	SD	p value
Yes	45	22.11	8.96	0.001
No	5	9.20	4.66	

Graph 12 Pre operative duration of Peritonitis > 24 Hours and MPI Score

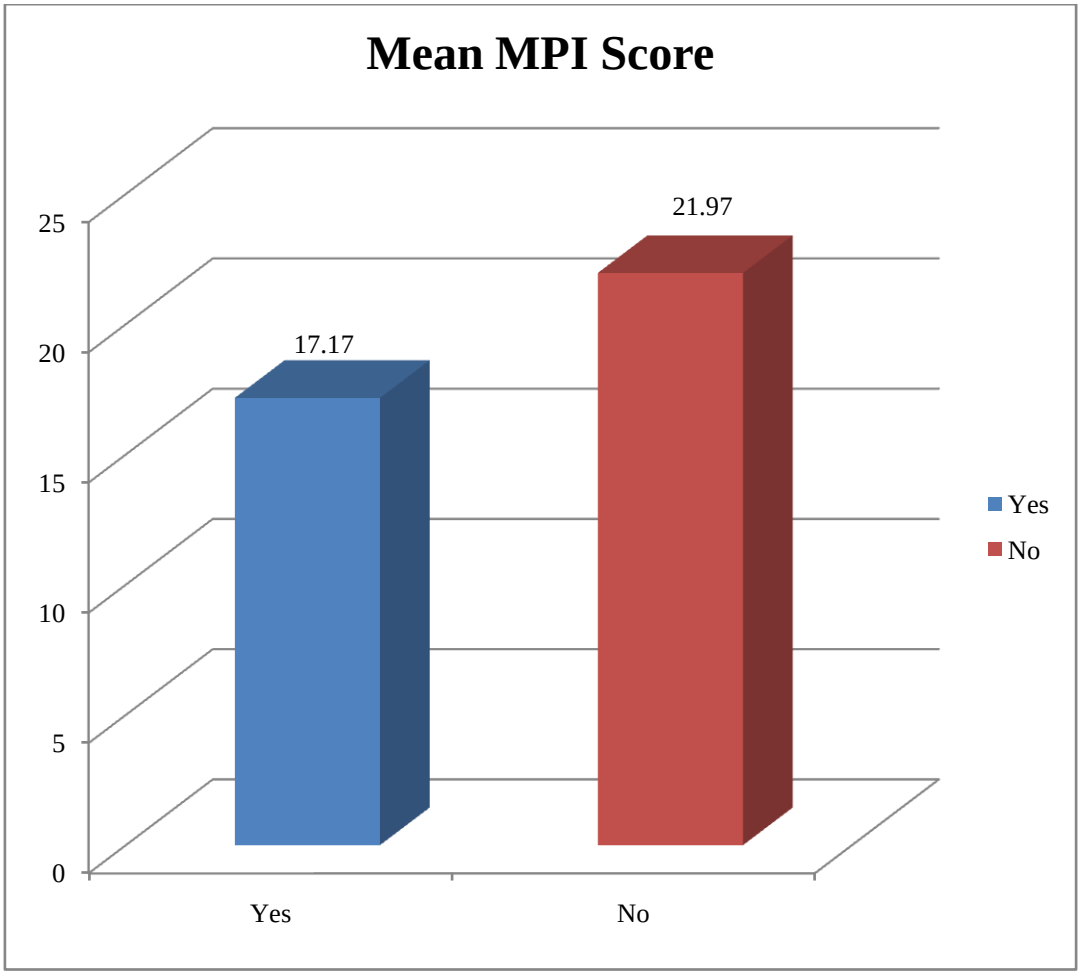


In the present study we have done the comparison of Mean MPI score between both the patients with Pre operative duration of Peritonitis > 24 Hours (22.11±8.96) and patients without Pre operative duration of Peritonitis > 24 Hours (9.20±4.66) by using independent t test and we found there was statistical difference in mean MPI score between both the groups, p value was 0.001.

Table 13 Origin of Sepsis Non Colonic and MPI Score

Origin of Sepsis Non Colonic	N	Mean MPI Score	SD	p value
Yes	12	17.17	7.89	0.096
No	38	21.97	9.68	

Graph 13 Origin of Sepsis Non Colonic and MPI Score

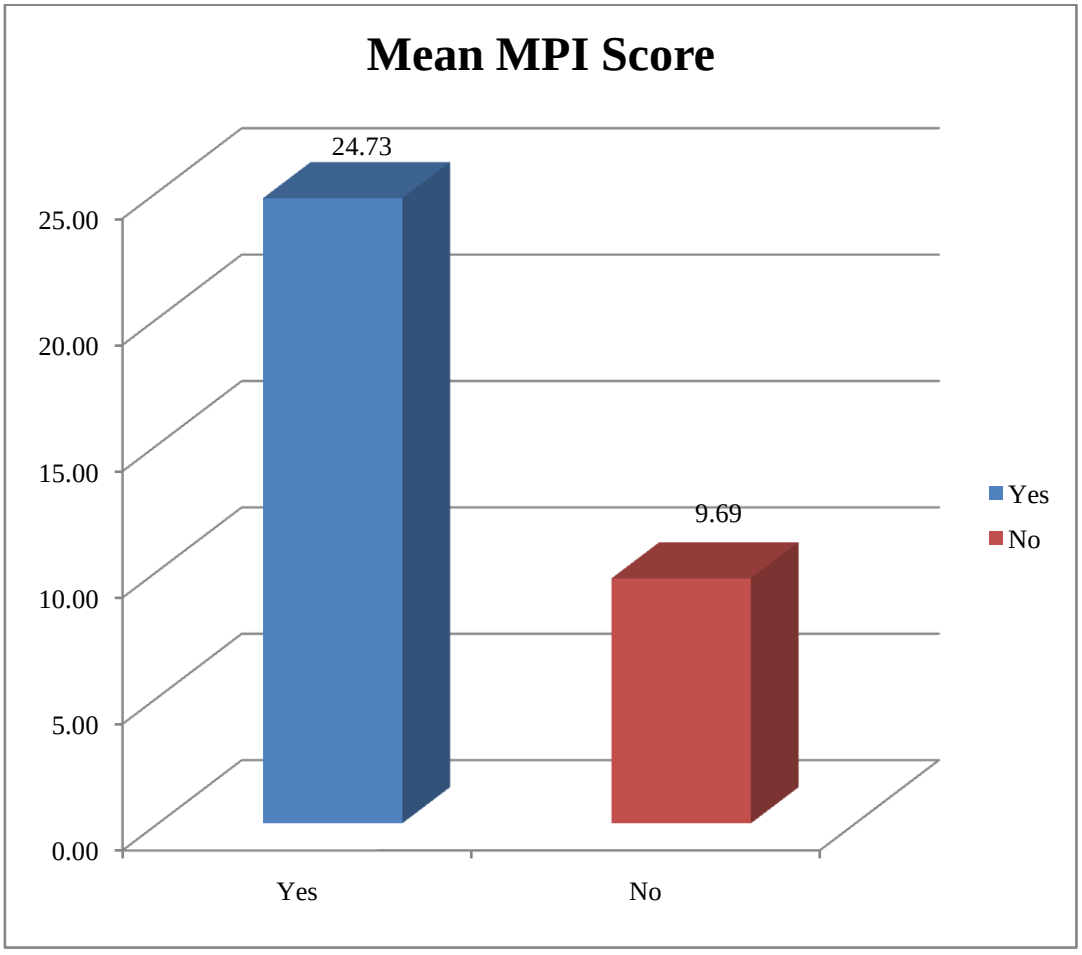


In the present study we have done the comparison of Mean MPI score between both the patients with Origin of Sepsis Non Colonic(17.17±7.89) and patients without Pre Origin of Sepsis Non Colonic (21.97±9.68) by using independent t test and we found there was not statistical difference in mean MPI score between both the groups, p value was 0.096.

Table 14 Diffuse Generalized Peritonitis and MPI Score

Diffuse Generalized Peritonitis	N	Mean MPI Score	SD	p value
Yes	37	24.73	7.30	0.000
No	13	9.69	4.77	

Graph 14 Diffuse Generalized Peritonitis and MPI Score

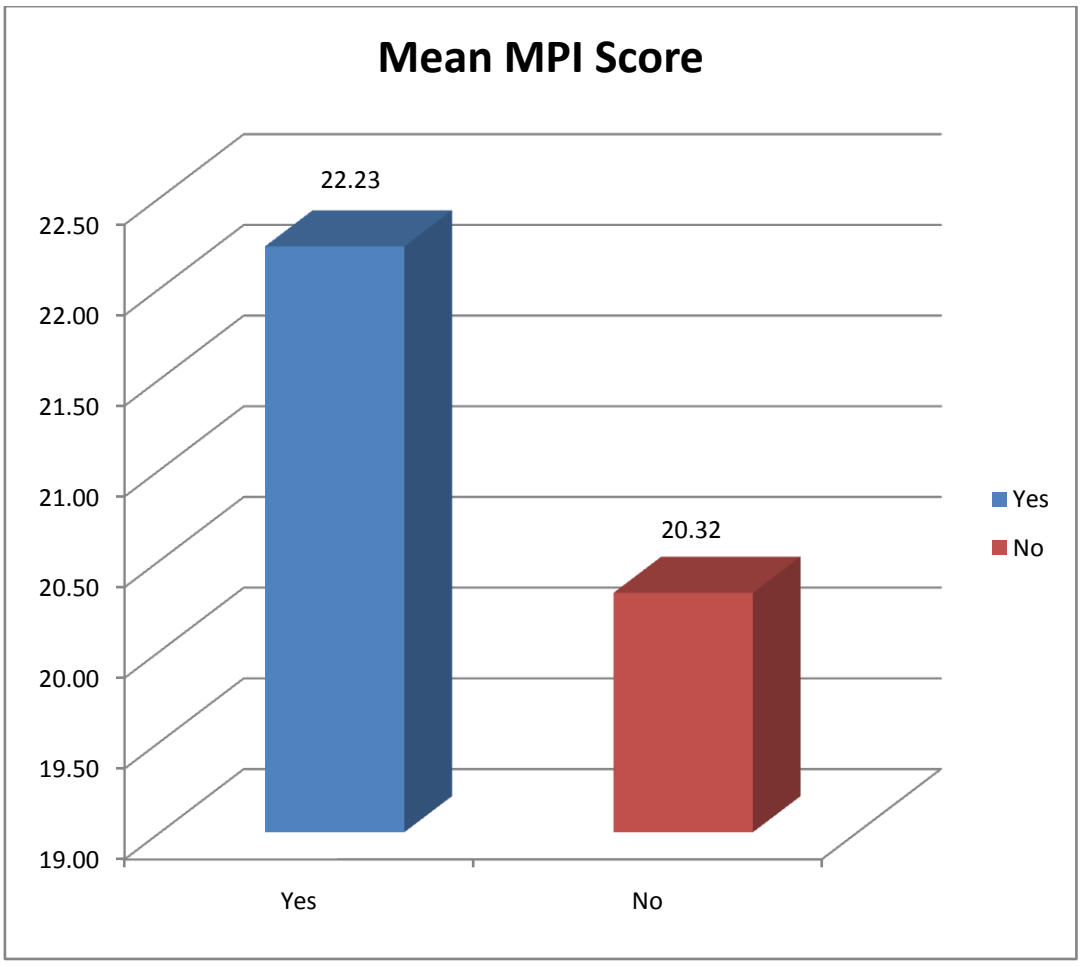


In the present study we have done the comparison of Mean MPI score between both the patients with Diffuse Generalized Peritonitis (24.73±7.30) and patients without Diffuse Generalized Peritonitis (9.69±4.77) by using independent t test and we found there wasstatistical difference in mean MPI score between both the groups, p value was 0.000.

Table 15 Purulent and MPI Score

Purulent	N	Mean MPI Score	SD	p value
Yes	13	22.23	7.75	0.487
No	37	20.32	10.01	

Graph 15 Purulent and MPI Score

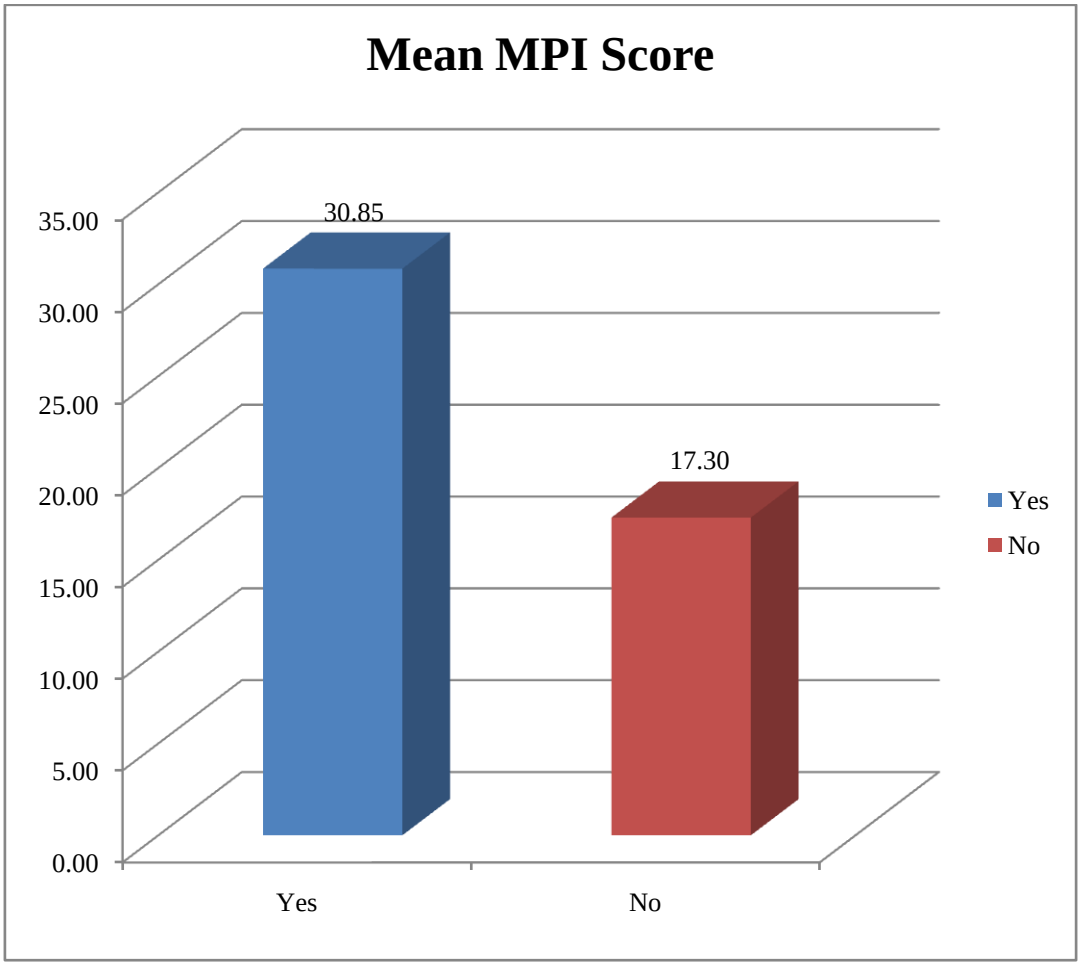


In the present study we have done the comparison of Mean MPI score between both the patients with purulent (22.23±7.75) and patients without purulent(20.32±10.01) by using independent t test and we found there was not statistical difference in mean MPI score between both the groups, p value was 0.487.

Table 16 Faecal and MPI Score

Faecal	N	Mean MPI Score	SD	p value
Yes	13	30.85	5.06	0.000
No	37	17.30	7.98	

Graph 16 Faecal and MPI Score



In the present study we have done the comparison of Mean MPI score between both the patients with Faecal (30.85±5.06) and patients without Faecal(17.30±7.98) by using independent t test and we found there was statistical difference in mean MPI score between both the groups, p value was 0.000.

Table 17 USG Findings and Mean MPI Score

USG Findings	N	Mean	SD	Minimum	Maximum
Appendicitis	9	17.89	7.17	9	33
Appendicular Mass	1	25.00	NA	25	25
Diffuse Peritonitis	1	14.00	NA	14	14
Liver Abscess	10	15.00	7.83	4	25
Multiple Liver Abscess + GB Calculi	1	32.00	NA	32	32
Obstruction	16	20.06	9.63	4	34
Perforation	12	28.17	8.26	10	39
Total	50	20.82	9.44	4	39

In present study we have calculate the mean MPI score for all USG findings done in enrolled patients and we found that Patients with Perforation had significantly high Mean MPI followed by Obstruction compare to other USG findings.

Mean MPI in patients with Perforation was 28.17±8.26 where as mean MPI in patients with Obstruction was 20.06±9.63.

Graph 17 USG Findings and Mean MPI Score

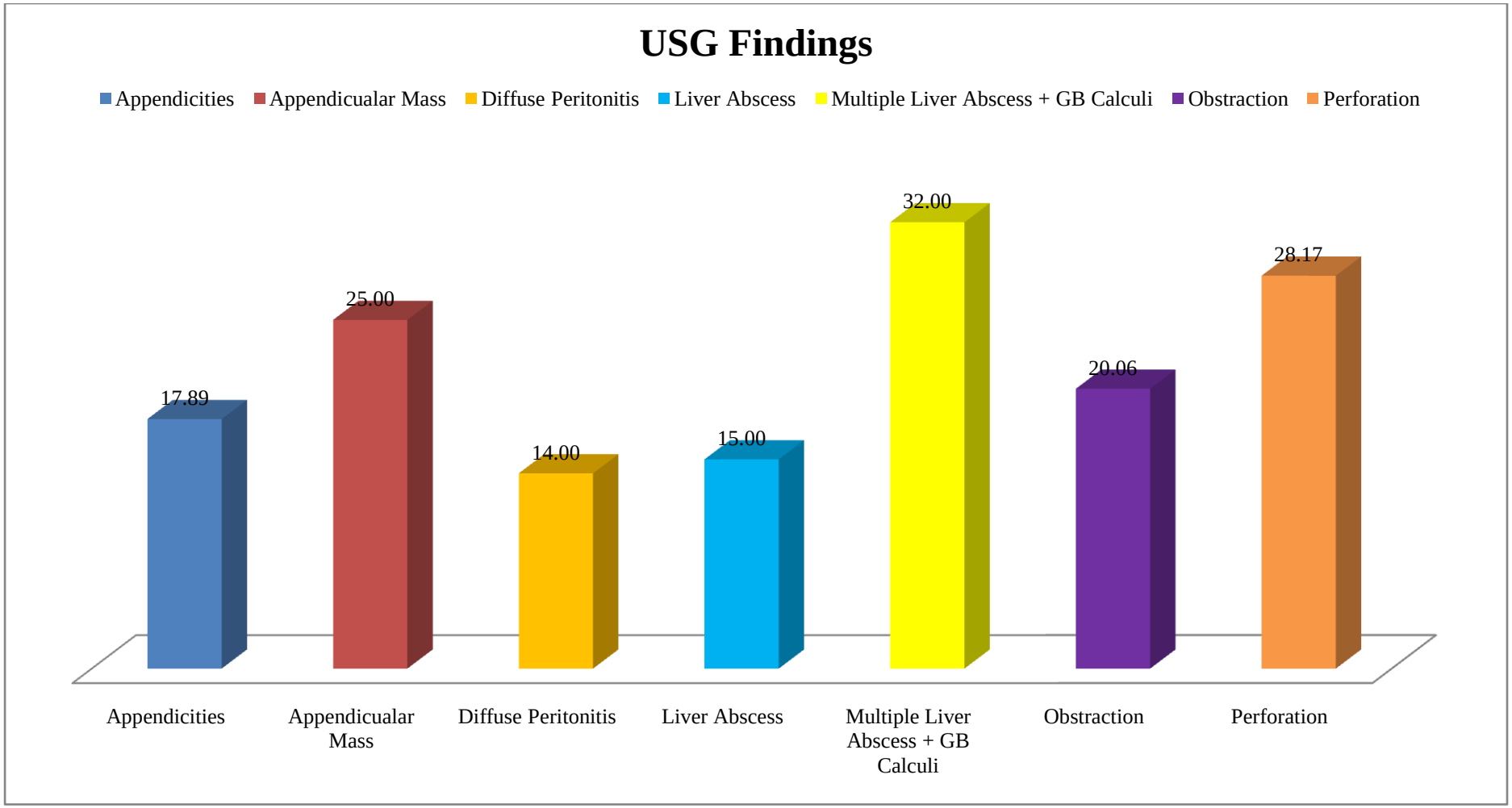
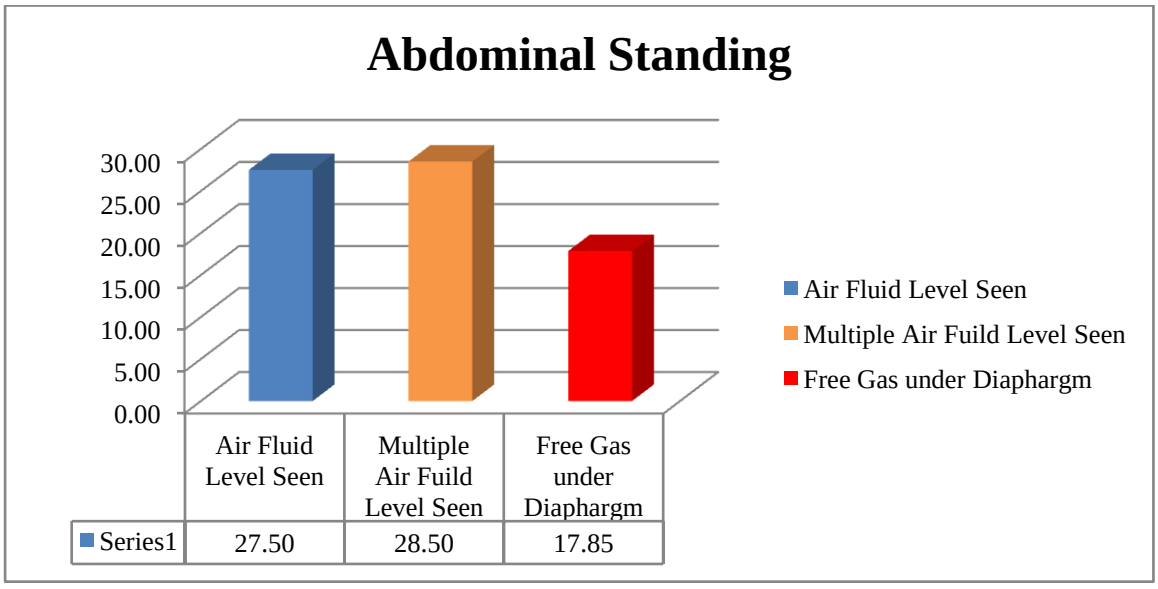


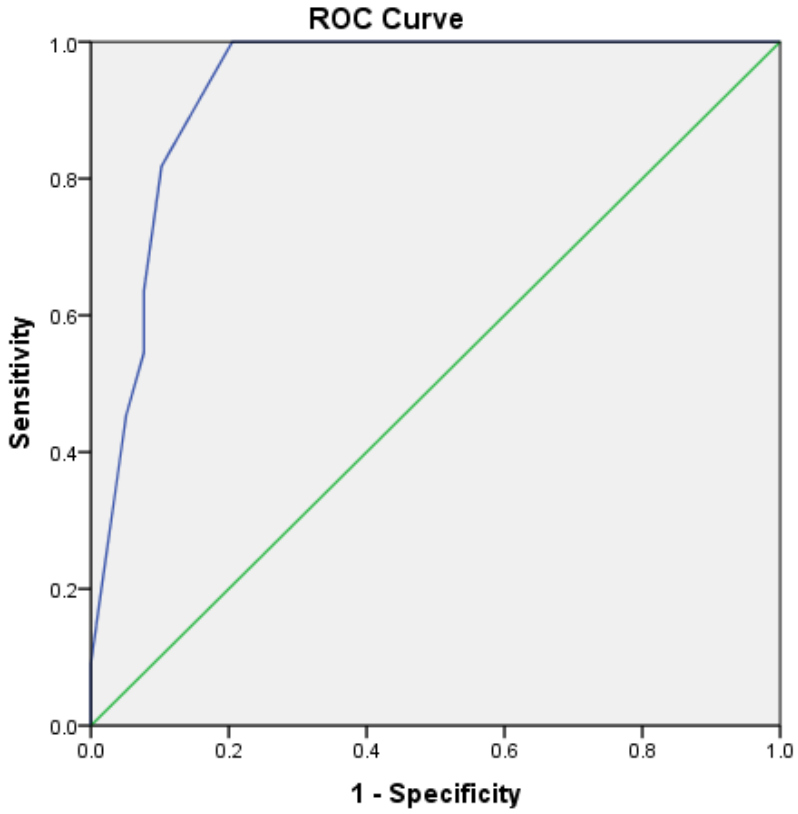
Table 18 Abdominal Standing and Mean MPI Score

Abdominal Standing	N	Mean	SD	Minimum	Maximum
Air Fluid Level Seen	2	27.50	NA	33	22
Multiple Air Fluid Level Seen	12	28.50	7.50	14	39
Free Gas under Diaphragm	13	17.85	8.95	4	34
No	23	17.91	8.56	4	34
Total	50	20.82	9.44	4	39

Graph 18 Abdominal Standing and Mean MPI Score



In present study we have calculate the mean MPI score for Abdominal Standing in enrolled patients and we found that Patients with Multiple Air Fluid Level had significantly high Mean MPI followed by Air Fluid Level compare to other Abdominal Standings.



MPI score was analyzed with the mortality. With highest sensitivity of 92.09% and specificity of 90.43% MPI score of 26 was taken as a threshold value for dichotomous analysis using ROC curve. MPI score of 26 and more were associated with 20.00% mortality compared to patients with MPI score of 26 and less which was 0.2% mortality and was statistically significant. Summary of the MPI in our study has been depicted in.

DISCUSSION

6 Discussion

Mortality in patients with peritonitis remains high; various multi centricstudies insist this reality. Numerous factors accountable for this are kind of fundamental pathology, condition of the patient, nature of treatment offered to the particular patient. Hence it is difficult to foresee the prognosis in these patients. The disease process of peritonitis is complex in nature, to understand this scoring system which provides objective description of patient's condition at point is needed. [75]

The Mannheim's peritonitis index is one such exertion towards building up a comprehensive and dependable scoring system for peritonitis. [75]

Mannheim Peritonitis Index was initially developed from information gathered from 1253 patients with peritonitis treated between 1963 and 1979, and was produced by discriminate investigation of 17 conceivable risk factors, by Wacha. And 8 of these were of prognostic pertinence and are as of now utilized broadly to predict mortality from peritonitis.The information is collected at the time of admission and first laparotomy. [75]

As late as toward the finish of the nineteenth century, 90% of treated peritonitis cases led to death. Since that time, on account of the advance of surgical methods, new medications and anti-infection agents, present day serious care, better access to medicinal guide and better comprehension of the pathophysiology of this disease, death rates diminished especially. Tragically, regardless of the progress of medicine, peritonitis is still connected with high mortality of 10– 20%, in a few studies notwithstanding surpassing 60%. Study suggests that factor like Cause of the condition, factors related to patients and associated with the diagnostic and prognostic procedure are contribute to the final treatment outcome of the patients who were diagnosed to have peritonitis. [76]

Early stratification of patients relying upon the seriousness of their condition would facilitate making sufficient symptomatic and therapeutic steps and accordingly permit diminishment in mortality and recurrence of serious complication. A adequately selected scoring system would likewise take into consideration better examination of various diagnostic and therapeutic systems and in addition treatment results. The investigated Mannheim score appears a basic and viable indicator of death among patients experiencing surgery for peritonitis.[76]

Among the most generally known prognostic score lists utilized for classifying patients with abdominal sepsis are the Acute Physiology and Chronic Health Evaluation (APACHE) and the Peritonitis Index Altona (PIA)2 . The APACHE II framework depends on physiological findings and it is balanced by the patient's advancement. It has a vast scope of scores with little additions, each of them adds to the hazard estimation, and the score esteem characterizes the mortality chance level, and relates with the watched mortality. The Peritonitis Index Altona (PIA) depends on history and clinical examination determined information, intraoperative discoveries, and physiologic data. Subjective factors are changed into quantitative information and it has demonstrated. [71]

Investigation of the gathered material uncovered that division of patients in light of the acquired MPI score may help assess the risk of developing serious disturbances of the general condition the postoperative period and additionally the need of proceeded with treatment of the patient in an emergency unit relaparotomy. Sensible utilization of the score will encourage distinguishing proof of patients in the high-riskgroup, in this way perhaps bringing issues to light of their expanded danger of postoperative inconveniences, for example, cardiorespiratory failure, acidosis, electrolyte issue and postoperative wound complications. [76]

Regardless of the way that the Mannheim score is easy to use and effective in predicting mortality, it can't be utilized as a preoperative system utilized at admission to stratify patients in based on the risk of death, since it requires thought of intraoperative evaluation, for example, the nature of fluid in the peritoneal cavity and anatomical exit site and in addition histopathological assessment (a reason for neoplastic or non-neoplastic root). Other inconvenience of the score is the way that it doesn't consider chronic diseases and major systemic disorders, which are very important risk factors for death and serious complications. [76]

To sum up, stratification of patients with peritonitis to various risk groups is helpful. On account of it the administration, diagnostics and treatment of patients might be improved, shirking of genuine difficulties – more powerful, and a choice to begin concentrated treatment – less demanding and quicker to take. Such division likewise encourages settling on a choice to play out the most useful surgical strategies for a given hazard – radical for bringing down hazardous patients and more limited or less loading on account of patients from the high-chance gathering . Moreover, utilizing an arrangement of allocating patients to various groups takes into account exact and dependable correlation of various symptomatic and remedial activities in clinical examinations. It is suggested, be that as it may, to build up an ideal cut-off point for each examined bunch contingent upon the statistic attributes of the considered populace keeping in mind the end goal to accomplish the most astounding conceivable prescient power. [76]

Since the publication of MPI, every one of the examinations attempted to approve Mannheim peritonitis index including our investigation demonstrate a noteworthy ascent in death rate over the basic score of 26. At the point when ordered in three groups, the most reduced mortality was seen in <21 score and the most elevated with scores>29 ($p<0.001$).Although expanding score predicts expanding mortality, it ought to be noticed that still a death rate makes due

with scores over 29 among deceased patients (81.81% in our investigation). This reflects that the quality of prediction is to such an extent that it can't be connected to singular patients for taking choices in regards to more forceful treatment or constraint of treatment. This has additionally been affirmed in the largest multicenter study to approve the utilization of MPI. In opposition to this a few examinations have demonstrated a right around 100% mortality above score and have recommended that MPI can be utilized as criteria for choosing the ideal treatment approach for peritonitis. Indeed, even laparoscopic sanitation of stomach cavity has been prescribed for patients having scores underneath. Curiously high MPI has additionally been appeared to be related with parasitic disease in patients with punctured peptic ulcer and it has been prescribed that a high MPI score in thesepatients ought to be utilized as a sign for prophylactic antifungal treatment.

MPI has likewise been utilized as a part of specific studies to stratify patients for correlation of various methods and has been appeared to be precisely associated with morbidity and mortality. [77]

Considering each risk factor independently in our examination just age>50 years, malignancy, organ failure and pre-operative length of peritonitis > 24 hours. Rest of the variables had insignificant effect on mortality

Age over 50 was related with a high mortality (72.00%), a fact demonstrated in every one of the investigations completed on peritonitis and mortality. Mean age of the all patients (41.40 years) and that of survivors (37.94 years) was like what was seen in different studies [78]. However, the mean age of non-survivors is significantly not as much as that appeared in different studies (53.67 years contrasted with upto 66 years in other studies) [78,79]. This maybe due to a generally lower life expectancy in our population. Nearness of organ failure at the time of first surgery was the most noteworthy hazard factor. It expanded the odds of mortality by 8.9 times, be that as it may, it is vital to

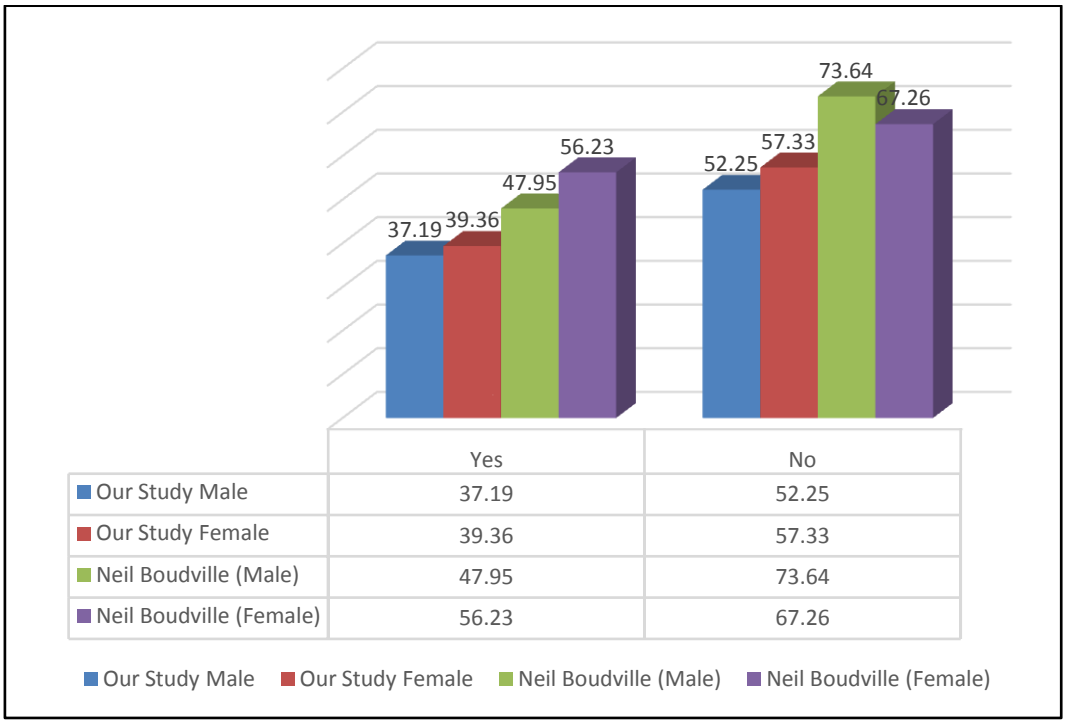
take note of that of the considerable number of individuals who created organ failure just 37.5% died while 62.5% still survived. Among non-survivors 81.82% had at least one organ failure at the time of first surgery. Different investigations have indicated organ failure to be available in 100% of expiries, yet in those examinations likely organ failure as reason for death has been confused for the presence of this factor at the time of first surgery

Pre-operative duration of peritonitis > 24 hours was additionally significantly associated with early outcome, like different investigations [78,80]. This by implication likewise accentuates the significance of early basic decision making in regards to surgery in these cases.

Table 19 Comparison of Mean age of Mortality

Alive	Our Study				Neil Boudville et al[87]			
	Male		Female		Male		Female	
	Mean Age	SD	Mean Age	SD	Mean Age	SD	Mean Age	SD
Yes	37.19	12.84	39.46	15.25	47.95	-	56.23	-
No	52.25	17.80	57.33	10.69	73.64	-	67.26	-

Graph 19 Comparison of Mean age of Mortality



- In our study mean age of male patients who were alive was 37.19 and mean age of 52.25 were dead while in study by Neil Boudville[87] it was 47.95 and 73.64 respectively
- Female patient had higher mean age with 39.46 who were alive and 57.33 who were dead which is comparable to study by Neil Boudville et al[87].
- India being developing country with < 5% of GDP diverted towards health sector patients either neglect and presents late to our tertiary institute thus,lower mean age in our study compaired to other study.
- Most of the patient in our study belongs to lower socio-economic status having poor nutritional status and there for having low healing power and health status.
- In this investigation, there was an obvious predominance of male patients (78.00%) not at all like different examinations where gender composition varies from 43 to 52% females and 48 to 57% males [78, 81]. However, this did not impact mortality and the odds ratio calculated

for female sex and mortality stayed under. This connotes sex, as a risk factor for mortality in peritonitis is not autonomously connected with adverse outcome.

Comparison of MPI Index:

- Diverse examinations have mortalities ranging from 6.4% to 17.5% [70]. As indicated by the literature MPI is an independent, objective and effective scoring system in foreseeing mortality and has favorable circumstances over the other scoring system.

- Kusumoto yoshiko et al., assessed the reliability of the MPI in predicting the result of patients with peritonitis in 108 patients. In their study they have found high mortality in patients with MPI score more than 26 compare to the patients with MPI score less than 26. He concluded that patients with MPI score more than 26 had 14 times higher risk of mortality compare to patients with MPI score less than 26 [82]

- Malik AA et al., did imminent investigation utilizing 101 back to back patients having summed up peritonitis over a two-year time frame. In the MPI framework, mortality was 0 in the gathering of patients with a score of under 15, while it was 4% in the patients scoring 16-25 and 82.3% in those with scores of more than 25. [83]

- In the study carried out by Notash et al in patients with peritonitis, he found that mortality rate was extremely high with the high MPI score and he concluded that patients with MPI score more than 29.5 had highest morality and he also found in his study all patients were died with MPI score more than 29 [84]

- Similar findings were found in Billing wt al study he found that MPI score less than 21 had less risk of mortality compare to patients with MPI score more than 21, i.e. patients with MPI score more than 21 had 23 times higher ruisk of mortality compare to MPI score less than 21. Also patients witn MPI score more than 29 has 40 times higher risk of mortality compare to MPI score < 21 and 0.8 times higher risk compare to MPI score between 21 to 29

- In the investigation group, 75% of the patients had dismalness regarding wound contamination and SICU (surgical intensive unit) with MPI score more than 21 when contrasted with 5.7% among patients with MPI score under 21. The positive prescient estimation of MPI score for bleakness is 75% with affectability 83.33%, specificity-90.74%. Three patients required SICU tend to three to four days. In the investigation gathering, 84.8% of patients had mortality among patients with MPI score more than or equivalent to 21 and none of the patients kicked the bucket with MPI score under 21. The positive prescient estimation of MPI scores for mortality 84.8%, affectability 100% and specificity-90.74%.

- Billing et al found for an edge file score of 26, the affectability was 86 (territory 54-98) per penny, specificity 74 (territory 58-97) per penny and exactness 83 (territory 70-94) per penny in foreseeing demise. For patients with a score under 21 the mean death rate was 2.3 (range 0-11) per penny, for score 21-29, 22.5 (range 10.6-50) per penny and for score more prominent than 29, 59.1 (range 41-87) per penny. The mean record score and mean death rate connected in the diverse groups, mirroring a homogeneous standard of treatment for peritonitis. The Mannheim peritonitis file gives a simple and solid methods for hazard assessment and order for patients with peritoneal aggravation. [85]

- A study conducted by Kusumoto and Nakagawa and they found that mortality was higher in female compare to male with other findings he found age is also associated with high mortality in patients. When he done a comparison of MPI score they found that MPI score more than 26 had 14 times higher risk compare to MPI score less than 26 [86]
- Salamone et al found mortality was 25.96%. Most noteworthy sensitivity and specificity for the MPI score as an indicator of mortality was at the score of 20. MPI score of <16 had 0.15 times bring lower risk of mortality contrasted with patients with MPI score 17 – 21 and 0.61 lower than patients with MPI >22. Patients with MPI score 17– 21 had 0.46 times bring lower risk of mortality contrasted with patients with MPI score >21. In the gathering of patients with MPI score of >20 the death rate was 48.5% for patients older than 80 years of age and 12.1% for more young patients ($p < 0.005$); in the group with MPI score of < 20 death rate was separately 8.4% and 1.4% ($p < 0.005$). [69]

- In present study we have enrolled total 50 patients with peritonitis and assesses the effectiveness and reliability of the Mannheim Peritonitis Index for the prediction of the outcome and also check the sensitivity and specificity of the index in that we have found mortality rate was 22.00 % which similar to the other studies. We also found that MPI score more than 26 is highly associated with higher rate of mortality and among deceased patients we found that 81.81 % patients had MPI score more than 29 and these results also similar to other studies. MPI score more than 26 have mortality rate of 68.75% whereas MPI Score less than 26 have mortality rate of 2.96.

Table 20 MPI Comparison

Study	MPI Score	
	≥26	<26
Kusumoto yoshiko et al	41.00%	3.80%
Malik AA et al	82.30%	4.00%
Present Study	68.75%	2.96%

Graph 20 MPI Comparison

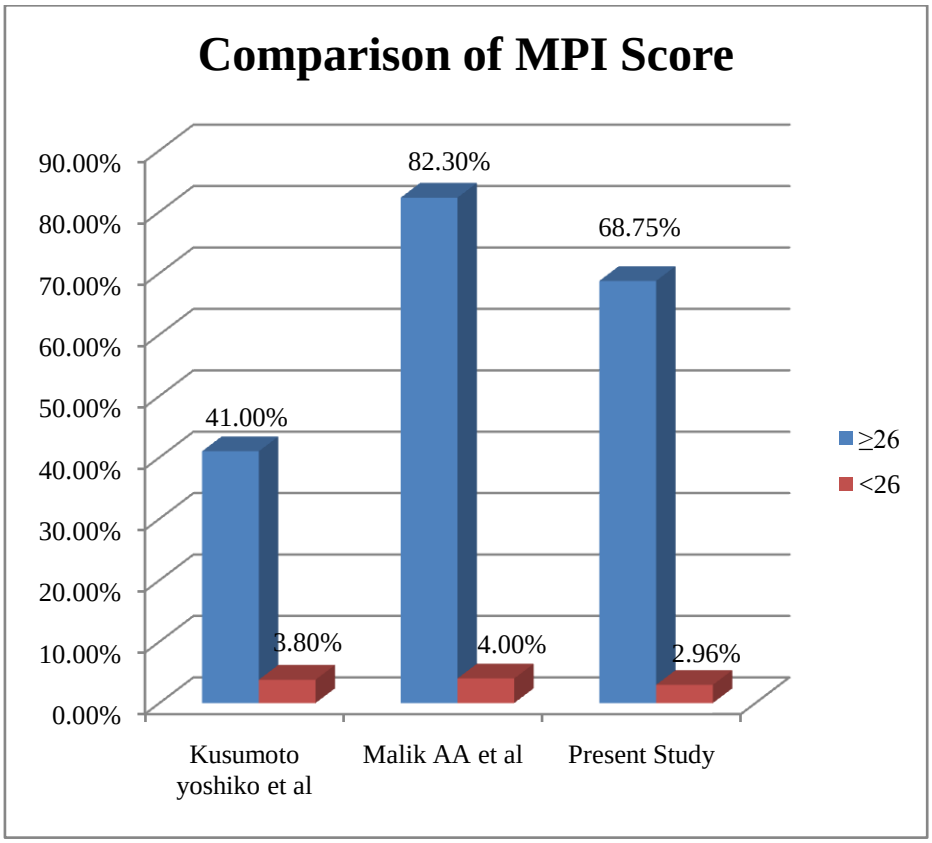
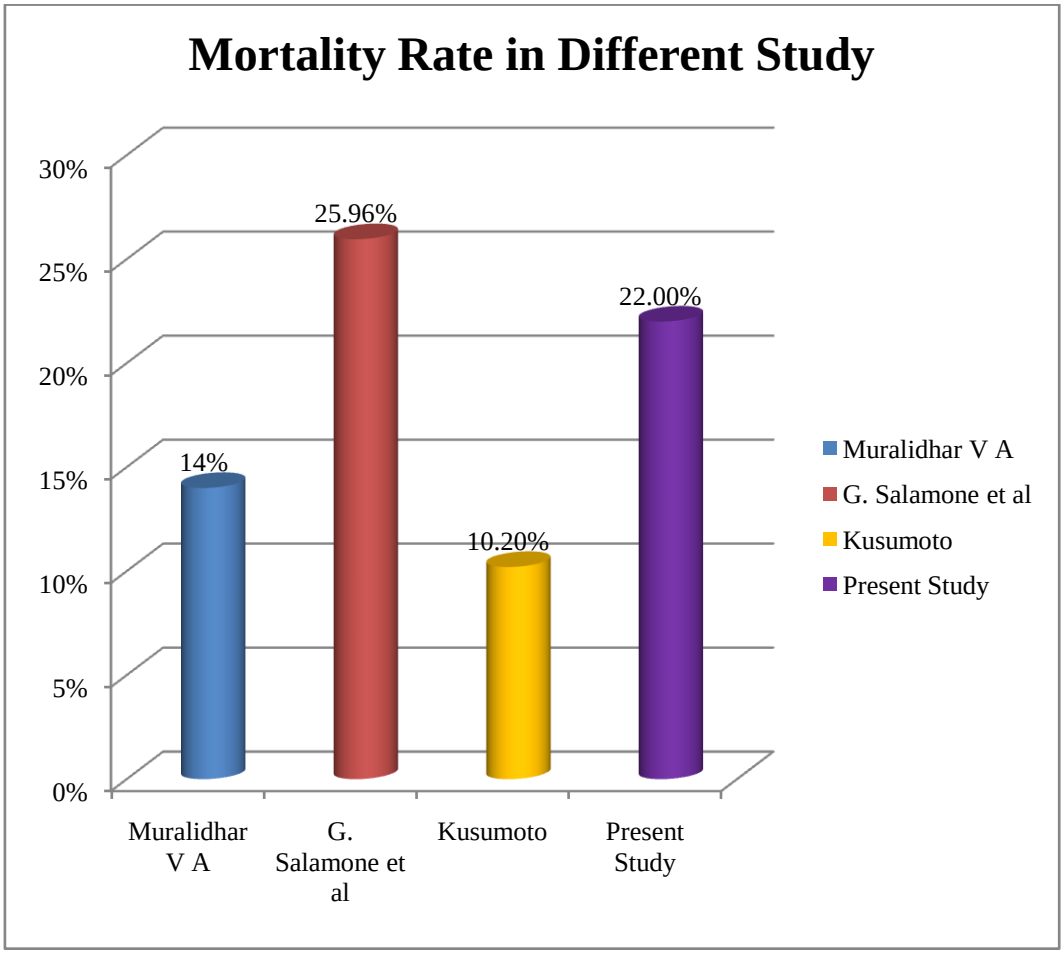


Table 21 Comparison of Mortality Rate

Study	Mortality Rate
Muralidhar V A	14%
G. Salamone et al	25.96%
Kusumoto	10.20%
Present Study	22.00%

Graph 21 Comparison of Mortality Rate



- We suggested that the MPI cut-point should be adjusted for each hospital. Evidently our results can only be applied to hospitals with very similar characteristics, in order to support the prediction power of the MPI.

- We have compared our USG findings data with the study done by P.Budzynski et al and we have found that in his study they concluded that Acute Appendicitis was major cause of Peritonitis where as in present study Perforation and Obstruction were major cause of Peritonitis. In their study Intestinal Perforation was at second highest cause of peritonitis.

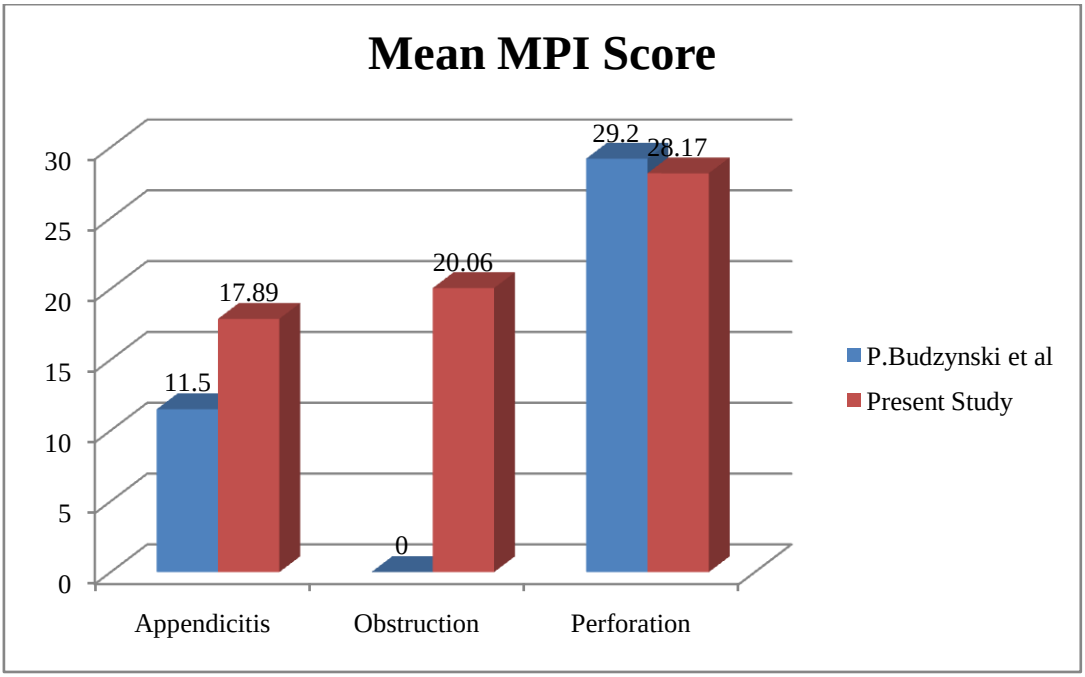
- We have also compared mean MPI score and USG findings with study done by P.Budzynski et al and we have found that mean MPI score was found to be higher in patients with Perforation which is similar to the results found in the study done by P.Budzynski et al. Following table is showing the comparison of the USG Findings and mean MPI score of present study and P.Budzynski et al study.

Table 22 Comparison of USG Findings

USG Findings	P.Budzynski et al	SD	Present Study	SD
Appendicitis	11.5	17	17.89	7.17
Obstruction	NA	NA	20.06	9.63
Perforation	29.2	9.2	28.17	8.26

So we have concluded that perforation is highly associated with high MPI score in patients with peritonitis.

Graph 22 Comparison of USG Findings



SUMMARY

7 Summary

- Total 50 patients diagnosed with peritonitis were enrolled for this study.
- In present study we have found a mortality rate of 22.00% in patients with peritonitis.
- Patients with Age more than 50, Organ Failure and Feacal Exudate were strongly associated with higher rate of mortality in patients with peritonitis as compared to the other parameters.
- The patients who died in our study duration, out of them 81.81% patients presented with organ failure.
- The patients who died in our study duration, out of them 72.72% patients presented with Feacal Exudate
- Patients with peritonitis having an MPI score of more than 26 had a higher rate of mortality compared to that with score lesser than 26.
- In present study we have found that death rate was less in female gender (18.75%) compare to male gender (23.53%) which was in contrast with MPI scoring index.
- Mean hospital stay was higher in patients who had MPI score more than 26 (17.40 days) compare to patients who had MPI score less than 26 (12.03 days).
- Patient having peritonitis as a result of perforation had higher rate of mortality compare to other causes of peritonitis.
- The patients who died in our study duration, i.e. 11 patients, all were having preoperative duration of peritonitis > 24 hours and diffused generalized peritonitis.
- It was found that mean MPI score was higher in female (22.81) compare to male(19.88) patients.
- MPI score was higher in patients with organ failure and also mortality rate also were higher in this group of patients where mean MPI score for patients with orgal failure was 26.54 while the patients not having organ failure had mean MPI score of 15.54.

- Mean MPI score was comparatively higher in the group of patients who had pre operative duration of peritonitis > 24 hours that was 22.11 as compared to those having pre operative lesser than 24 hours i.e. 9.20.
- Diffused generalized peritonitis was significantly associated with high MPI score(i.e. 24.73).
- Faecal Exudate was also highly associated with high mean MPI score (i.e. 30.85).

CONCLUSION

8 Conclusion

- In our study mean age of male patients who were alive was 37.19 and mean age of 52.25 were dead while in study by Neil Boudville[87] it was 47.95 and 73.64 respectively

- Female patient had higher mean age with 39.46 who were alive and 57.33 who were dead which is comparable to study by Neil Boudville et al[87].

- India being developing country with < 5% of GDP diverted towards health sector patients either neglect and presents late to our tertiary institute thus,lower mean age in our study compaired to other study.

- Most of the patient in our study belongs to lower socio-economic status having poor nutritional status and there for having low healing power and health status.

- In this investigation, there was an obvious predominance of male patients (78.00%) not at all like different examinations where gender composition varies from 43 to 52% females and 48 to 57% males [78, 81]. However, this did not impact mortality and the odds ratio calculated for female sex and mortality stayed under. This connotes sex, as a risk factor for mortality in peritonitis is not autonomously connected with adverse outcome.

- Diverse examinations have mortalities ranging from 6.4% to 17.5% [70]. As indicated by the literature MPI is an independent, objective and effective scoring system in foreseeing mortality and has favorable circumstances over the other scoring system.

- Kusumoto yoshiko et al., assessed the reliability of the MPI in predicting the result of patients with peritonitis in 108 patients. An examination of MPI and mortality indicated patients with a MPI score of 26 or less to have mortality of 3.8%, where as those with a score surpassing 26 had mortality of 41.0%. [82]

- Malik AA et al., did imminent investigation utilizing 101 back to back patients having summed up peritonitis over a two-year time frame. In the MPI framework, mortality was 0 in the gathering of patients with a score of under 15, while it was 4% in the patients scoring 16-25 and 82.3% in those with scores of more than 25. [83]

- Notash et al have indicated essential slice off focuses to be 21 and 29 when utilizing the MPI, with mortality of 60%, and up to 100% for scores of more than 29.5. [84]

- In Billing et al patients with scores of under 21 had a death rate going from 0-2.3% and those with MPI in the vicinity of 21 and 29 had a death rate of around 65%. MPI score of more than 29 had the most noteworthy mortality, up to over 80% in a few investigations.

- In the investigation group, 75% of the patients had dismalness regarding wound contamination and SICU (surgical intensive unit) with MPI score more than 21 when contrasted with 5.7% among patients with MPI score under 21. The positive prescient estimation of MPI score for bleakness is 75% with affectability 83.33%, specificity-90.74%. Three patients required SICU tend to three to four days. In the investigation gathering, 84.8% of patients had mortality among patients with MPI score more than or equivalent to 21 and none of the patients kicked the bucket with MPI score under 21. The positive prescient estimation of MPI scores for mortality 84.8%, affectability 100% and specificity-90.74%.

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- Kusumoto and Nakagawa found a general mortality was 5.3% in men and 15.2% in female, with death happening just in patients more established than 50 years. A correlation of MPI and mortality indicated patients with a MPI score of 26 or less to have mortality of 3.8%, where as those with a score surpassing 26 had mortality of 41.0%. [86]

- Salamone et al found mortality was 25.96%. Most noteworthy sensitivity and specificity for the MPI score as an indicator of mortality was at the score of 20. MPI score of <16 had 0.15 times bring lower risk of mortality contrasted with patients with MPI score 17 – 21 and 0.61 lower than patients with MPI >22. Patients with MPI score 17– 21 had 0.46 times bring lower risk of mortality contrasted with patients with MPI score >21. In the gathering of patients with MPI score of >20 the death rate was 48.5% for patients older than 80 years of age and 12.1% for more young patients ($p < 0.005$); in the group with MPI score of < 20 death rate was separately 8.4% and 1.4% ($p < 0.005$). [69]

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Index for the prediction of the outcome and also check the sensitivity and specificity of the index in that we have found mortality rate was 22.00 % which similar to the other studies. We also found that MPI score more than 26 is highly associated with higher rate of mortality and among deceased patients we found that 81.81 % patients had MPI score more than 29 and these results also similar to other studies. MPI score more than 26 have mortality rate of 68.75% whereas MPI Score less than 26 have mortality rate of 2.96.

- We suggested that the MPI cut-point should be adjusted for each hospital. Evidently our results can only be applied to hospitals with very similar characteristics, in order to support the prediction power of the MPI.

- We have compared our USG findings data with the study done by P.Budzynski et al and we have found that in his study they concluded that Acute Appendicitis was major cause of Peritonitis where as in present study Perforation and Obstruction were major cause of Peritonitis. In their study Intestinal Perforation was at second highest cause of peritonitis.

- We have also compared mean MPI score and USG findings with study done by P.Budzynski et al and we have found that mean MPI score was found to be higher in patients with Perforation which is similar to the results found in the study done by P.Budzynski et al. Following table is showing the comparison of the USG Findings and mean MPI score of present study and P.Budzynski et al study.

- Age of the patient was associated with the high rate of mortality in patients with peritonitis. The patients in the age group of 50-70 years of agehad higher mortality.

- Intestinal Obstruction and Perforation was associated with high mean MPI score compare to other USG findings and hence had a higher mortality compared to others.

- Studies suggests that Gender also effects the outcome of peritonitis whereas in present study mean MPI score was higher in female patients compare to male patients but we did not find any significant change in mortality rate in female gender.

- MPI score is highly associated with mean duration of hospital stay of the patients. In present study we found that hospital stay was high in patients with high MPI score.

- Preoperative duration of peritonitis > 24 hours, Organ failure, Diffuse Generalized peritonitis and Faecal Exudates also highly associated with outcome of patients with peritonitis.

- MPI is disease particular, simple scoring system for anticipating the mortality in patients with secondary peritonitis. Expanding scores are related with poorer prognosis, needs intensive management and henceforth it is ought to be utilized routinely in clinical practice.

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ANNEXURES

10 ANNEXURE

PROFORMA

Patient Details				
OPD/IPD No				
Name of Patient	Age		Gender	
Address				
Ward	Date of Admission			
Date of Surgery				
Clinical History				

Past History	
History of Similar Complaints	Diabetes Mellitus
Trauma	Hypertension
History of Previous Surgery	Addiction

Examination	
General Examination	
Blood Pressure	Body Temperature
Pulse Rate	Respiratory Rate
Pallor	Icterus
Cynosis	Clubbing
Oedema	Lymphadenopathy
System Review	
RS	CVS
CNS	Per Abdomen
Inspection	
Abdominal Contour	Flanks
Umbilicus	Hernial Sites
Visible peristalsis	Dilated Veins/Scar
Palpation	
Temperature	Tenderness
Rebound Tenderness	Lump(if any)
For Organomegaly (if any)	
Percussion	
Fluid Thrill	Dullness
Auscultation	
For Bowel Sounds	Aortic Pulsation
Investigation	
General Examination	

Examination		
Hb	Na^+,K^+,Cl	ECG
WBC	Blood Group & Rh	USG
Platelets	HbsAg	Chest X Ray
Urea	HIV	Abdomen Standing
Create		

RISK FACTORS	SCORE
AGE > 50 YEARS	5
FEMALE GENDER	5
ORGAN FAILURE	7
MALIGNANCY	4
PREOPERATIVE DURATION OF PERITONITIS > 24 HRS	4
ORIGIN OF SEPSIS NON COLONIC	4
DIFFUSE GENERALISED PERITONITIS	6
EXUDATES	
CLEAR	0
PURULENT	6
FAECAL	12
TOTAL SCORE	

INFORMED CONSENT FORM

SUMANDEEP VIDYAPEETH UNIVERSITY

Piparia, Ta. Waghodia, Dist. Vadodara Pin: 391760

Informed Consent Form (ICF) for Participants in Research Programmes involving studies on human beings

Study Title: - USEFULNESS OF MANNHEIM'S PERITONITIS INDEX SCREENING SYSTEM IN PREDICTING OUTCOME IN PATIENTS WITH PERITONITIS

Please initial box (Subject)

(i) I confirm that I have read and understood the information sheet dated ……...…. for the above study and have had the opportunity to ask questions. ☐

(ii) I understand that my participation in the study is voluntary and that I am free to withdraw at any time, without giving any reason, without my medical care or legal rights being affected. ☐

(iii) I understand that the Sponsor of the clinical trial, others working on the Sponsor's behalf, the Ethics Committee and the regulatory authorities will not need my permission to look at my health records both in respect of the current study and any further research that may be conducted in relation to it, even if I withdraw from the trial. I agree to this access. However, I understand that my identity will not be revealed in any information released to third parties or published. ☐

(iv) I agree not to restrict the use of any data or results that arise from this study provided such a use is only for scientific purpose(s) ☐

(v) I agree to take part in the above study. ☐

Signature (or Thumb impression) of the Subject/LAR: _____

Date: ____/____/____

Signatory's Name: _____

Signature of the Investigator: _____

Date: ____/____/_____

Study Investigator's Name: _____

Signature of the Witness _____

Date: ____/____/_____

Name of the Witness:

Sumandeep Vidyapeeth University
S.B.K.S Medical Institute and Research Centre

Piparia, Ta. Waghodia, Dist. Vadodara Pin 391760

PARTICIPANT INFORMATION SHEET

Title: Usefulness of Mannheim's Peritonitis Index Screening System in predicting outcome in patients with Peritonitis:

Study No. _____
Date_____

Invitation to participant

Purpose & nature of the study:

This study is intended to throw light upon the topic of*Usefulness of Mannheim's Peritonitis IndexScreening System in Predicting Outcome in Patients with Peritonitis*

1. Introduction:
   Peritonitisis an inflammation of the peritoneum, the thin tissue that lines the inner wall of the abdomen and covers most of the abdominal organs.
   Peritonitis may be localized or generalized, and may result from infection (often due to rupture of a hollow abdominal organ as may occur in abdominal trauma or inflamed appendix) or from a non-infectious process.

2. What is the purpose of this study?
   Early prognostic evaluation of patients with peritonitis is desirable to select high-risk patients for intensive management and also to provide a reliable objective classification of severity and operative risk. This study attempts to evaluate the use of scoring Mannheim Peritonitis Index (MPI) in patients with peritonitis.

3. Why have I been chosen?
   Dhiraj hospital being a tertiary care centre we come across numerous patients with acute abdominal pain and peritonitis. So this study is taken up for management of those patients in need.

4. Do I have to take part?
   On Voluntary basis.

5. How long will the study last?
   2years

6. What will happen to me if I take part?
   Patient will have to sign a consent and after admission they would be assessed according to Mannheim's Peritonitis Index and would be managed accordingly.
   - *Screening Period: on admission*
   - *Treatment Period: till patient's recover*
   - *Allocation of investigational product:*
   - *Follow-up period: 2 months*

7. What do I have to do?
   Patient would have to get admitted and management will be done either operative / conservative. Patients need to pay for antibiotics and for cost of suture material. They will not be charged for Operation.

8. What is the drug being tested?
   None

9. What are the benefits of the study?
   The benefit of this study is likely to diagnose and allow early intervention in patients with peritonitis and to help to judge the prognosis of the patients with peritonitis with the help of this *Mannheim's Index.*

10. What are the side effects of the treatment received during the study?
    None

11. What if new information becomes available?
    Mannheim's Index would be used to assess patients with peritonitis and would become a standard protocol for management of patient with peritonitis.

12. What happens when the study stops?
    Data collected from the study would be gathered and come to conclusion.

13. Will my taking part be kept confidential?
    Yes

14. What else should I know?
    Regarding Post-Operative Physiotherapy, Post-operative Antibiotics cost.

15. Additional Precautions:
    None

16. Who to call with questions?
    Dr Sagar J Vaghela
    09879429996

સંમતિ પત્રક ફોર્મ

સુમનદીપ વિદ્યાપીઠ યુનિવર્સિટી

મનુષ્યો પરના અભ્યાસોને સંલગ્ન રિસર્ચ પ્રોગ્રામ્સના સહભાગીઓ માટે સંમતિ પત્ર

Study Title: - પેરિટોનાઇટિસ સાથેના દર્દીઓમાં પરિણામમાં મન્હેઈમની પેરિટોનાઇટિસ ઇન્ડેક્સ સ્કીનિંગ સિસ્ટમની ઉપયોગીતા

Please initial box (Subject)

(i) હું પુષ્ટિ કરું છું કે મેં ઉપરોક્ત અભ્યાસ માટે માહિતી શીટ વાંચી અને સમજી લીધી છે અને મને પ્રશ્નો પૂછવાની તક મળી છે. ☐

(ii) હું સમજી શકું છું કે અભ્યાસમાં મારો સહભાગિગારી સ્વૈચ્છિક છે અને તે કોઈપણ તબીબી સંભાળ વિના અથવા કોઈ કાનૂની અધિકારોને પ્રભાવિત કર્યા વિના, કોઈપણ કારણ વગર હું કોઈપણ સમયે પાછી ખેંચી શકું છું. ☐

(iii) હું સમજી શકું છું કે પ્રાયોજકના વતી પ્રાયોજક, અન્ય લોકો પ્રાયોજકની વતી કાર્યરત છે, એથિક્સ કમિટી અને નિયમનકારી સત્તાધિકારીઓને વર્તમાન અભ્યાસના સંદર્ભમાં અને અન્ય કોઈપણ સંશોધન કે જે હાથ ધરવામાં આવે છે તેના માટે મારા સ્વાસ્થ્યના વિકમની તપાસ કરવાની મારી પરવાનગીની જરૂર નથી. તે સંબંધમાં, જો હું અજમાયશમાંથી પાછો ખેંચી લો હું આ ઍક્સેસથી સંમત છું જો કે, હું સમજું છું કે તૃતીય પક્ષો માટે પ્રકાશિત કરેલી કોઈપણ માહિતીમાં અથવા પ્રકાશિત કરેલી મારી ઓળખ જાહેર કરવામાં આવશે નહીં. ☐

(v) હું આ અભ્યાસમાંથી જન્મેલા કોઈપણ ડેટા અથવા પરિણામોના ઉપયોગને પ્રતિબંધિત કરવા સંમતિ આપતો નથી, પરંતુ આનો ઉપયોગ વૈજ્ઞાનિક હેતુ (ઓ) માટે જ છે. ☐

(vi) હું ઉપરના અભ્યાસમાં ભાગ લેવા માટે સંમત છું. ☐

હસ્તાક્ષર (અથવા અંગૂઠા છાપ):

તારીખ: __/____/____

નામ: _____

_____

તપાસકર્તાના હસ્તાક્ષર: _____

તારીખ: ____/____/_____

અભ્યાસ તપાસ કરનારનું નામ: _____

સાક્ષીની હસ્તાક્ષર _____

તારીખ: ____/___/_____

સાક્ષીનું નામ:

સુમનદિપ વિધ્યાપીઠ

પીપરીયા તા. વાઘોડિયા જી. વડોદરા-૩૯૧૭૬૦

દરદી માહિતી શીટ

Title: પેરિટોનાઇટિસ સાથેના દર્દીઓમાં પરિણામમાં મન્હેઈમની પેરિટોનાઇટિસ ઇન્ડેક્સ સ્ક્રીનિંગ સિસ્ટમની ઉપયોગીતા

Study No. _____
Date_____

Invitation to participant

આ અભ્યાસનો વિષય પેરિટોનાઇટિસ સાથેના દર્દીઓમાં પરિણામમાં મન્હેઈમની પેરિટોનાઇટિસ ઇન્ડેક્સ સ્ક્રીનિંગ સિસ્ટમની ઉપયોગીતા

1. પરિચય:
   પેરીટેઓનિયમની બળતરા પેરિટોનાઇટિસ, પાતળા પેશીઓ કે જે પેટની આંતરિક દિવાલને રેખા કરે છે અને પેટની અંગોના મોટા ભાગને આવરી લે છે.
   પેરીટોનોટીસ સ્થાનાંતરણ અથવા સામાન્યીકરણ થઈ શકે છે, અને ચેપમાંથી પરિણમી શકે છે (ઘણીવાર પેટના આડઅસર અથવા સોજો પરિશિષ્ટમાં હોઈ શકે તેવા હોલો પેટની અંગના ભંગાણને કારણે) અથવા બિન-ચેપી પ્રક્રિયામાંથી.

2. આ અભ્યાસનો હેતુ શું છે?
   પેરિટોનાઇટિસ ધરાવતા દર્દીઓના પ્રારંભિક આગાહીયુક્ત મૂલ્યાંકન સઘન સંચાલન માટે ઉચ્ચ જોખમ ધરાવતા દર્દીઓને પસંદ કરવા માટે અને ગંભીરતા અને ઓપરેટિવ રિસ્કનું વિશ્વસનીય ઉદ્દેશ વર્ગીકરણ પ્રદાન કરવા માટે ઇચ્છનીય છે. પેરીટોનોટીસ ધરાવતા દર્દીઓમાં માનહેમ પેરીટોનિસ ઇન્ડેક્સ (એમપીઆઇ) નો સ્કોરિંગનો ઉપયોગ મૂલ્યાંકન કરવાનો આ અભ્યાસ કરે છે

3. શા માટે મને પસંદ કરવામાં આવ્યા છે?

ધીરજ હોસ્પિટલ એ તૃતીય સંભાળ કેન્દ્ર છે, અમે તીવ્ર પેટની પીડા અને પેરિટોનાઇટિસ ધરાવતા અસંખ્ય દર્દીઓમાં આવે છે. તેથી આ અભ્યાસની જરૂરિયાત ધરાવતા દર્દીઓના સંચાલન માટે લેવામાં આવે છે.

4. શું મને ભાગ લેવાની જરૂર છે?
   સ્વૈચ્છિક આધાર પર.

5. અભ્યાસ કેટલા સમય સુધી ચાલશે?
   2 વર્ષ

6. જો હું ભાગ લેતો હોઉં તો શું થશે?
   પેશન્ટને સંમતિ પર સહી કરવી પડશે અને પ્રવેશ પછી તેઓનું મૂલ્યાંકન મેનહેમના પેરીટોનાઇટિસ ઇન્ડેક્સ મુજબ કરવામાં આવશે અને તેના આધારે તેનું સંચાલન કરવામાં આવશે.

7. મારે શું કરવું પડશે?
   દર્દીને ભરતી કરવી પડશે અને સંચાલન કાં તો ઓપરેટિવ હશે. દર્દીઓએ એન્ટિબાયોટિક્સ માટે ચૂકવણી કરવાની જરૂર છે

8. કઈ દવાની ચકાસણી થઈ રહી છે?
   એકે નહિ

9. અભ્યાસના લાભો શું છે?
   આ અભ્યાસના ફાયદામાં પેરિટોનાઇટિસ ધરાવતા દર્દીઓમાં પ્રારંભિક હસ્તક્ષેપ અને તેનાથી મનિહેહમના ઇન્ડેક્સની મદદ સાથે પેરીટેનોઈટિસ સાથેના દર્દીઓના નિદાનની તપાસ કરવામાં મદદ મળી શકે છે..

10. અભ્યાસ દરમિયાન મળતી સારવારની આડઅસરો શું છે?
    એકે નહિ

11. નવી માહિતી ઉપલબ્ધ થાય તો શું?
    મેંનહેહેમનું ઇન્ડેક્સ પેરિટોનાઇટિસ ધરાવતા દર્દીઓનું મૂલ્યાંકન કરવા માટે ઉપયોગમાં લેવાશે અને પેરિટોનાઇટિસ સાથે દર્દીના સંચાલન માટે પ્રમાણભૂત પ્રોટોકોલ બનશે.
    .

12. જ્યારે અભ્યાસ બંધ થાય ત્યારે શું થાય છે?

અભ્યાસમાંથી એકત્ર કરેલ માહિતી ભેગી કરવામાં આવશે અને તારણ પર આવશે..

13. શું મારો ભાગીદારી ગુપ્ત રાખવામાં આવશે?
    હા

14. બીજું શું મારે જાણવું જોઈએ?
    પોસ્ટ ઑપરેટિવ ફિઝિયોથેરાપી, પોસ્ટ ઓપરેટિવ એન્ટિબાયોટિક્સના ખર્ચ અંગે.

15. વધારાની સાવચેતીઓ:
    એકે નહિ

16. પ્રશ્નો સાથે કોને કૉલ કરવો?
ડૉ સાગર જે વાઘેલા
09879429996

सूचित सहमति फॉर्म

सुमनदिप विध्यापिठ

पीपरीया ता.वाघोडिया जी.वडोदरा-३९१७६०

संमतिफ़ोर्म सँशोधन कार्यक्रममे भाग लेने वाले मनुष्यके अध्ययन के लिये

<u>अध्ययन शीर्षक:</u> "- पेनिटोनीटिस के साथ रहने वाले व्यक्तियों में मनीहेम की पेरीटोनिट्स इंडेक्स स्क्रीनिंग सिस्टम की उपयुक्तता"

१. मैं पुष्टि करता / कहती हूँ की मैंने उपर की पूरी माहिती पढी है और समझ ली है ओर कोइभी प्रश्न पुछ्ने का अवसरहे.
२. मैं पुष्टि करता / कहती हूँ की यह अभ्यासा में मै अपनी मरझी से जुडी हूँ और कभी भी मेरी मरझी मुताबिक मै ये अभ्यास कीसी भी वजह बताये बीना छोड़ सकती हूँ और ये करने से मेरी सारवार परा कोइ विपरीत असर नहीं होगा और मेरे अधिकारों का सन्मान होगा.
३. मैं पुष्टि करता / कहती हूँ और अपनी मरझी से समर्थाना देती हूँ की यह अभ्यास के अवलोकन और परिणामो समझाने और झाचने के लिए प्राथामिका अभ्यासकर्ता , उसके मार्गदर्शक और ये होस्पिटल के अधिकारियों को और एथिकल कमिटी के सभ्यों को अधिकार देती हूँ.मै यह समझती हूँ की मेरे पहचान झाहिर किये बिना यहाँ अवलोकन और परिणामो को संपादित कर सकेगे.
४. यहाँ अभ्यास के दौरान मिले हुए सारे अवलोकनों और परिणामो का उपयोग सिर्फा वैद्यानिका उपयोग के लिए ही किया जाएगा.
५. मै अपनी मरझी से इस अभ्यास में भाग लेने के लिए समति देती हूँ.

सही अथवा बाएहाथकेअगूठाकानिशान तारीख

सही करने वाले का नाम :

_____

प्राथामिका अभ्यास करता की सही : तारीख

प्राथामिकाअभ्यासकरताकानाम:

साक्षीकीसही तारीख

साक्षीका नाम :

सुमनदिपविध्यापिठ

पीपरीयाता.वाघोडियाजी.वडोदरा-३९१७६०

दर्दी की माहितिपत्रीका

<u>अध्ययन शीर्षक:</u> "- पेनिटोनीटिस के साथ रहने वाले व्यक्तियों में मनीहेम की पेरीटोनिट्स इंडेक्स स्क्रीनिंग सिस्टम की उपयुक्तता"

1। परिचय:
पेरिटोनियम की सूजन, पेरिसटिनीटिस, पतली ऊतक, जो पेट के भीतर की दीवार को रेखांकित करता है और पेट के सभी अंगों को शामिल करता है। पेरिटोनिटिस को स्थानीयकृत या सामान्यीकृत किया जा सकता है, और संक्रमण का परिणाम हो सकता है (प्रायः पेट के आघात या सूजन परिशिष्ट में हो सकता है एक खोखले पेट के अंग के टूटने के कारण) या गैर-संक्रामक प्रक्रिया से।

2. इस अध्ययन का उद्देश्य क्या है?
पेरिटोनिटिस के साथ रोगियों के शुरुआती भविष्यवाचक मूल्यांकन में गहन प्रबंधन के लिए उच्च जोखिम वाले रोगियों का चयन करना और साथ ही गंभीरता और संचालक जोखिम का एक विश्वसनीय उद्देश्य वर्गीकरण प्रदान करना वांछनीय है। यह अध्ययन पेरिटोनिटिस के रोगियों में मैनहेम पेरिटोनिटिस इंडेक्स (एमपीआई) को स्कोरिंग के इस्तेमाल का मूल्यांकन करने का प्रयास करता है।

3. मुझे चुना गया है क्यों?
धीरज अस्पताल एक तृतीयक देखभाल केंद्र होने पर हम बहुत से रोगियों में आते हैं जो तीव्र पेट दर्द और पेरिटोनिटिस के होते हैं। इसलिए इस अध्ययन की आवश्यकता होती है उन रोगियों के प्रबंधन के लिए।

4. क्या मुझे भाग लेना है?
स्वैच्छिक आधार पर

5. अध्ययन पिछले कितने समय तक होगा?
2 साल

6. अगर मैं भाग लेता हूं तो मेरे साथ क्या होगा?
रोगी को सहमति पर हस्ताक्षर करना होगा और प्रवेश के बाद उन्हें मैनहेम के पेरिटोनिटिस सूचकांक के अनुसार मूल्यांकन किया जाएगा और तदनुसार प्रबंधन किया जाएगा।

7. मुझे क्या करना होगा?
रोगी को भर्ती करना होगा और प्रबंधन या तो ऑपरेटिव / रूढ़िवादी होगा। रोगियों को एंटीबायोटिक दवाओं के लिए और सीवन सामग्री की लागत के लिए भुगतान करना होगा वे ऑपरेशन के लिए शुल्क नहीं लिया जाएगा

8. क्या दवा का परीक्षण किया जा रहा है?
कोई नहीं
9. अध्ययन के क्या लाभ हैं?

इस अध्ययन के लाभ के लिए रोगियों में पेरिटोनिटिस के शुरुआती हस्तक्षेप का विश्लेषण और अनुमति देने की संभावना है और इस मैनहेम के सूचकांक की सहायता से पेरिटोनिटिस वाले रोगियों के रोग का निदान करने में मदद करने के लिए मदद करता है।
10. अध्ययन के दौरान प्राप्त उपचार के दुष्प्रभाव क्या हैं?

कोई नहीं
11. यदि नई जानकारी उपलब्ध हो तो क्या होगा?

मैनहेम का सूचकांक पेरिटोनिटिस के साथ रोगियों के आकलन के लिए इस्तेमाल किया जाएगा और पेरिटोनिटिस के साथ रोगी के प्रबंधन के लिए एक मानक प्रोटोकॉल बन जाएगा।

12. जब अध्ययन बंद हो जाता है तो क्या होता है?
अध्ययन से एकत्र किए गए आंकड़े इकट्ठे किए जाएंगे और निष्कर्ष पर पहुंचेंगे।

13. क्या मेरा भाग लेना गोपनीय रखा जाएगा?
हाँ

14. मुझे और क्या पता होना चाहिए?
पोस्ट-ऑपरेटिव फिजियोथेरेपी, पोस्ट-ऑपरेटिव एंटीबायोटिक दवाओं के संबंध में

15. अतिरिक्त सावधानी:
कोई नहीं

16. प्रश्न पूछने वाले कौन?
डॉ सागर वाघेला
09879429996

Sr No	Age	Gender	Ward	Clinical History	History of Similar Complaints	DM	Trauma	HTN	H/o Previous Sx	Addiction	USG	Chest X Ray	Abdomen Standing	Total Score	Status	Hospital Stay(days)
1	22	M	MSW	Pain in Right Upper Quandrant of Abdomen	No	No	No	No	No	Alcoholic (4 Years)	Liver Abscess	Normal	No	20	Alive	10
2	35	F	FSW	Pain in Abdomen	No	No	No	No	No	No	Liver Abscess	Normal	No	15	Alive	12
3	60	M	MSW	Pain in Abdomen	No	No	No	No	No	Smoking (30 Years)	Perforation	Normal	Free Gas Under Diaphragm	27	Deceased	15
4	40	F	FSW	Pain in Right Upper Quandrant of Abdomen	No	No	No	No	No	No	Liver Abscess	Normal	No	19	Alive	10

Sr No	Age	Gender	Ward	Clinical History	History of Similar Complaints	DM	Trauma	HTN	H/o Previous Sx	Addiction	USG	Chest X Ray	Abdomen Standing	Total Score	Status	Hospital Stay(days)
5	50	M	MSW	Pain in Right Upper Quandrant of Abdomen	No	No	No	No	No	Alcoholic (15 Years)	Liver Abscess	Normal	No	25	Alive	10
6	21	M	MSW	Pain in Abdomen with Rigidity	No	No	Yes	No	No	No	Small Intestine Obstraction	Normal	Multiple Air Fluid Levels Seen	4	Alive	15
7	70	M	MSW	Pain in Abdomen	No	No	No	No	No	No	Small Intestine Obstraction	Normal	Multiple Air Fluid Levels Seen	34	Deceased	15
8	44	M	MSW	Pain in Right Upper Quandrant of Abdomen	No	Yes	No	No	No	Smoking (20 Years)	Liver Abscess	Normal	No	10	Alive	12
9	35	M	MSW	Tender Abdomen	No	No	No	No	No	No	Liver Abscess	Normal	No	5	Alive	10

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10	40	M	MSW	TRTA with Abdominal Tenderness	No	No	Yes	No	No	Alcoholic (20 Years)	Perforation	Normal	Free Gas Under Diaphragm	22	Alive	15
11	48	F	FSW	Tenderness & Rigidity Over Addomen	No	No	No	No	No	No	Perforation	Normal	Free Gas Under Diaphragm	34	Deceased	20
12	38	M	MSW	Pain in Right Upper Quandrant of Abdomen	No	No	No	No	No	No	Liver Abscess	Normal	No	4	Alive	10
13	50	M	MSW	Pain in Abdomen	No	No	No	No	No	Alcoholic (30 Years)	Liver Abscess	Normal	No	8	Alive	10
14	40	M	MSW	Generalized Abdomen Pain	No	No	No	No	No	No	Peptic Perforation	Normal	Free Gas Under Diaphragm	29	Deceased	18

Sr No	Age	Gender	Ward	Clinical History	History of Similar Complaints	DM	Trauma	HTN	H/o Previous Sx	Addiction	USG	Chest X Ray	Abdomen Standing	Total Score	Status	Hospital Stay(days)
15	40	M	MSW	Abdomenal Fullness	No	No	No	No	No	No	Intestinal Obstruction	Normal	Multiple Air Fluid Levels Seen	11	Alive	10
16	60	M	MSW	Generalized Abdomen Pain	No	No	No	No	No	No	Multiple Liver Abscess + GB Calculi	Normal	No	32	Deceased	20
17	35	M	MSW	Painfull & Full Abdomen	No	No	No	Yes	No	Smoking (10 Years)	Intestinal Obstruction	Normal	Multiple Air Fluid Levels Seen	22	Alive	15
18	20	F	FSW	Abdomenal Pain	No	No	No	No	No	No	Intestinal Obstruction	Normal	Multiple Air Fluid Levels Seen	15	Alive	12
19	50	M	MSW	Abdomenal Tenderness & Rigidity	No	No	No	No	No	No	Intestinal Obstruction	Normal	Free Gas Under Diaphragm	34	Alive	20

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20	60	M	MSW	Abdomenal Fullness	No	No	No	No	No	No	Intestinal Obstruction	Normal	Multiple Air Fluid Levels Seen	22	Alive	12
21	35	M	MSW	Abdomenal Tenderness & Rigidity	No	Yes	Yes	No	No	Alcoholic (40 Years), Smoking (35 Years)	Intestinal Perforation	Normal	Free Gas Under Diaphragm	34	Alive	20
22	16	M	MSW	Abdomenal Rigidity	No	No	Yes	No	No	No	Intestinal Perforation	Normal	Free Gas Under Diaphragm	29	Deceased	16
23	20	M	MSW	Abdomenal Pain	No	No	Yes	No	No	No	Perforation	Normal	Free Gas Under Diaphragm	29	Alive	15
24	65	M	MSW	Pain in Right Upper Quandrant of Abdomen	No	No	No	No	No	Alcoholic (35 Years)	Liver Abscess	Normal	No	25	Alive	12

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25	30	M	MSW	Abdomenal Fullness	No	No	No	No	Yes	No	Intestinal Obstruction	Normal	Multiple Air Fluid Levels Seen	15	Alive	10
26	70	M	MSW	Abdomenal Pain	No	No	No	No	No	Smoking (22 Years)	Duodanl Perforation	Normal	Free Gas Under Diaphragm	34	Deceased	18
27	23	M	MSW	Abdomenal Tenderness	No	No	No	No	No	Alcoholic (3 Years)	Peptic Perforation	Normal	Free Gas Under Diaphragm	17	Alive	12
28	30	M	MSW	Abdomenal Fullness	No	No	No	No	No	No	Intestinal Obstruction	Normal	Multiple Air Fluid Levels Seen	12	Alive	10
29	26	F	FSW	Abdomenal Fullness	No	No	No	No	No	No	Small Intestine Obstraction	Normal	Multiple Air Fluid Levels Seen	22	Alive	14
30	55	F	FSW		No	No	Present	No	No	Tobacco (15 Years)	Small Intestine Perforation	Normal	Free Gas Under Diaphragm	39	Deceased	15

Sr No	Age	Gender	Ward	Clinical History	History of Similar Complaints	DM	Trauma	HTN	H/o Previous Sx	Addiction	USG	Chest X Ray	Abdomen Standing	Total Score	Status	Hospital Stay(days)
31	40	M	MSW	Tenderness in Right Lower Abdomenal Quadrant	No	No	No	No	No	No	Perforated Appendix	Normal	No	10	Alive	12
32	60	F	FSW	Abdomenal Rigidity	No	No	No	No	No	No	Intestinal Obstruction	Normal	Multiple Air Fluid Levels Seen	27	Alive	15
33	50	M	MSW	Abdomenal Tenderness	No	No	No	No	No	No	Small Intestine Obstraction	Normal	Fluid Air Levels Seen	22	Alive	15
34	50	M	MSW	Abdomenal Pain	No	No	No	No	No	Alcoholic (18 Years)	Liver Abscess	Normal	No	19	Alive	12
35	18	M	MSW	Abdomenal Fullness	No	No	No	No	No	No	Intestinal Obstruction	Normal	Multiple Air Fluid Levels Seen	17	Alive	18

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36	22	M	MSW	Abdomenal Pain	No	No	No	No	No	No	Intestinal Obstruction	Normal	Multiple Air Fluid Levels Seen	4	Alive	10
37	34	M	MSW	Abdomenal Tenderness	No	No	No	No	No	No	Diffuse Peritonitis	Normal	Free Gas Under Diaphragm	14	Alive	10
38	52	M	MSW	Painful & Distended Left Lower Abdomenal Quadrant	No	No	No	No	No	Alcoholic (19 Years)	Colonic Perforation	Normal	No	34	Deceased	16
39	60	F	FSW	Abdomenal Fullness	No	No	No	No	No	No	Intestinal Obstruction	Normal	Air Fluid Levels Seen	33	Alive	20
40	35	F	FSW	Lump in Right Lower Quadrant	No	No	No	No	No	No	Appendicities	Normal	No	15	Alive	10

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41	42	M	MSW	Painful Right Lower Quandrant	No	No	No	No	No	No	Appendicities	Normal	No	17	Alive	10
42	50	M	MSW	Abdominal Tenderness towards Umbilicus	No	No	No	No	No	No	Appendicualar Mass	Normal	No	25	Deceased	18
43	30	F	FSW	Pain in Abdomenal	No	No	No	No	No	No	Appendicities	Normal	No	9	Alive	10
44	23	M	MSW	Pain in Right Side	No	No	No	No	No	No	Appendicities	Normal	No	10	Alive	10
45	30	F	FSW	Abdomenal Tenderness	No	No	No	No	No	No	Appendicities	Normal	No	15	Alive	12
46	22	F	FSW	Abdomenal Pain	No	No	No	No	No	No	Appendicities	Normal	No	21	Alive	12
47	60	F	FSW	Abdomenal Pain	No	No	No	No	No	No	Appendicities	Normal	No	20	Alive	15

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48	35	F	FSW	Tender in Right Lower Quandrant	No	No	No	No	No	No	Appendicities	Normal	No	21	Alive	12
49	69	F	FSW	Right Lower Quandrant Tenderness	No	No	No	No	No	No	Appendicities	Normal	No	33	Deceased	18
50	60	F	FSW	Abdomenal Rigidity	No	No	No	No	No	No	Intestinal Obstruction	Normal	Multiple Air Fluid Levels Seen	27	Alive	15