



CONFERENCE ON ONCO ANAESTHESIA, PAIN
AND CRITICAL CARE

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CHAIRMAN'S MESSAGE

“Oncology now has become a specialized field. In the past people used to say multi-specialty with an Oncology wing is better. But we in HCG as a group believe that a specialized Oncology center is a better way to get better outcomes to our cancer patients, since we would be more focused. So this is not only in the field of Medical oncology but also in the field of surgery and intensive care units. So Onco Anesthesiology has become a very important part as a sub specialty in Oncology itself. How do we assess an oncology patient, pre-operatively, what are the parameters we use for deciding some of the radical surgeries we do, who will qualify for that, is age a limitation for this, or is it more physical age v/s the performance of the individual which matters more. Because in the past several surgeries it has been told that this patient who is an onco patient they are elderly, risk v/s the benefit. Now with the advances in Anesthesiology we can proudly say that there are very few limitations for not performing advance surgeries or targeted surgeries in oncology patients to get better outcomes. Anesthesiology is playing a very vital role in this kind of major surgeries particularly in not only doing the surgery but also in post-operative recovery. Hence we believe in a specialized branch in Oncology itself as it is vital for Doctors to understand in-depth the role of Anesthesiology in onco patients so we will have overall better outcome for our patients. In this regards I congratulate our Anesthesiology team, Dr. Rajesh, Dr. Ashok and for the whole team for organizing this very visionary session in onco Anesthesiology.”

Dr. B S Ajaikumar
Chairman & CEO
HCG Enterprises Ltd.,

ORGANIZING CHAIRPERSON'S MESSAGE

Onco Anaesthesia is an Emerging speciality which needs to be recognized as such. This is because the patients undergoing surgery suffer from many co-morbidities, and also from the tumour. This demands that the anaesthetist understand not only the challenges imposed by the co-morbidities and other routine problems faced but also understand the tumour and its behavior and effect of treatment such as radiation chemotherapy etc.

The Health Care Global Hospitals has taken a leadership role in Oncology care. This is because it is the only hospital in the private sector totally focused on Oncology. Hence the variety and severity of disease burden of cancer is unique. Offering state of the art techniques with state of art facility, added to the burden of high patient expectation the hospital has to retain its commitment to keep improving as it grows.

This reflects in the HCG anaesthesia departments resolve to continually improve and share its expertise with others with similar interest.

There is a need for yearly Conferences on Onco anaesthesia and also the need to form a Society of Onco anesthesia to better understand, solve problems and diffuse knowledge about this speciality.

Dr. H.C.Rajesh
Senior Consultant & HOD of Anaesthesiology
HCG Enterprises Ltd.,

EDITOR'S MESSAGE

Cancer has outnumbered cardiovascular diseases as the leading cause of death in developed world, with India to follow a similar trend in near future. Cancer presents a unique challenge to all concerned in the disease treatment. Anaesthetists are often the only specialty involved from the early stage of diagnosis, continue during the disease management to cancer pain & end of life care services. As we try to understand cancer in a better way, malignancy poses a unique challenge with not only to the treating oncologist, but also to the anaesthesiologist managing the cancer stricken patient. In addition to this, the pathophysiological effects of chemo and radiotherapy create fresh problems in an already confused situation.

Cancer pain, end of life care and cancer critical care are akin to a different department by themselves which are alien to a regular practicing anaesthesiologist.

In view of this, the demand for carving out a subspeciality of Onco-Anaesthesia is definitely justified. The first conference of onco-anaesthesia, pain and critical care and the first edition of this journal will compliment such a demand.

We have placed in front of you, some of the challenges that are faced by an onco-anaesthesiologist in all these three departments on a regular basis.

We hope that this effort of ours will kindle a spark of interest in the field of onco-anaesthesia.

Dr. Raghunandan M
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CONTENTS

ONCO-ANAESTHESIA

1. Techniques to Reduce Blood Loss in Orthopedic Pelvic Tumors –
A Single Institution Experience of Twenty Five Cases 11
Dr. Raghunandan. M
2. Management of Post Oesophagectomy Respiratory Failure with Noninvasive
Ventilation 13
Dr.Roopashree.R & Dr. Ashok.K.V
3. Management of A Liver Transplant Recipient Posted for Laser TURP – A Case
Report 17
*Dr. Raghunandan.M, Dr. Rajesh. H. C, Dr. Basant Mahadevappa, Dr. Uday Bhaskar,
Dr.Monica Gupta,*
4. A Challenging Paediatric Case for Non-Operating Room Anaesthesia (NORA) 21
Dr. Monica Gupta, Dr. Ashok. K. V, Dr. Sridhar. P. S, Dr. Ajay Kumar. B. S

CANCER PAIN & PALLIATIVE:

1. Breast Pain Syndrome Post Breast Surgery 23
Dr. Vindya K, Dr. Raghavendra. R & Dr. Amelia Michael
2. Clinical Nurse Specialist Role in Pain Management 27
Dr. Lohithashva S O, Dr. Raghavendra.R & Dr. Amelia Michael
3. Yoga as an Adjuvant to Treat Cancer Related Neuropathic Pain 29
*Dr. Usha Rani MR, Dr.Raghavendra R, Dr.Raghavendra Rao, Dr.M Amelia SM,
Dr.Lohithashva SO, Dr. Vindya K.,*
4. Role of Non-Pharmacological Interventions in Cancer Pain 32
Dr.Usha Rani MR, Dr. Raghavendra Rao M

END OF LIFE CARE

1. END OF LIFE CARE – Thinking ahead does it matter? 38
Dr. Raghavendra.R, Dr. Amelia Michael.

ONCO-CRITICAL CARE

1. A Case of Lymphomatoid Granulomatosis Masquerading as a Lung Abscess 43
Dr. Ramesh Kannan
2. Cyclophosphamide-Induced Symptomatic Hyponatremia, a Rare but Severe Side Effect: A Case Report 46
Dr. Ramesh Kannan
3. Review of Length of ICU Stay in Cancer Patient's Undergoing Major Abdominal Surgeries – A Retrospective Study 51
Dr. Abhirami.R, Dr. Anand kumar.S & Dr. Rajesh. H. C

EDITORIAL COMMITTEE 57

Techniques to Reduce Blood Loss in Orthopedic Pelvic Tumors – A Single Institution Experience of Twenty Five Cases.

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BACKGROUND

Orthopedic pelvic tumor resection surgeries are historically known to be complex procedures associated with extensive resection and major blood loss directly amounting to very high rates of morbidity and mortality. Though techniques such as preoperative embolization have been described in literature, we in our institution follow a multi-pronged approach to reduce the perioperative blood loss. The HCG five technique rules are

1. Pre-operative embolization.
2. Hypotensive anaesthesia.
3. Intra-operative surgical conservation.
4. Use of radio-frequency energy vessel sealing devices (LigaSure®, Valley Lab, Inc., Boulder Colorado)
5. Computer Assisted Tumor Surgery (OrthoMAP 3D, Stryker Orthopedics, Mahwah, NJ, USA) navigation.

PATIENTS AND METHODS

Prospective case series study of twenty five cases from

Inclusion criteria: Large volume tumors, fungating tumors, heavily pre-radiated tumors and post whoops surgery.

Exclusion criteria: Small volume tumors, non-vascular tumors.

All patients underwent pre-operative embolization twenty four hours prior to surgery targeting complete resolvability of the tumor. DSA (GE Innova IGS540) angiogram of the lesion was acquired initially, followed by catheterization of the vessel supplying the tumor. Appropriate embolic materials (PVA particles, gel foam or coils) were chosen and embolization done.

On the following day anaesthesia was induced and hypotensive anaesthesia infusion. Radio frequency device (LigaSure®, Valley Lab, Inc., Boulder, Colorado) was used for vessel sealing and conservation of blood loss from skin incision to closure. Computer Assisted Tumor Surgery (OrthoMAP 3D, Stryker Orthopedics, Mahwah, NJ, USA) navigation was used to ensure complete the tumor resection.

Pre-operative and post-operative hemoglobin (post-op day one), estimation of intra-operative blood loss and total amount of blood transfused were documented.

RESULTS

Pre and post –operative hemoglobin levels did not show a significant drop (mean 2.4 G/dl), hence aiding in better en bloc surgical tumor resection, reduced morbidity and early recovery. Intra-operative blood loss estimated between 800ml to 5000ml (mean 1650ml). Intraoperative blood loss during pelvic surgeries world over have ranged from 400ml to 12,100ml^(1,2).

The average number of units of blood transfused was 4 PRBC (range 0 – 8) units. Two patients did not require any transfusion at all. A retrospective study of 160 hemipelvectomies reported that the average number of units transfused intraoperatively and during the first 2 days after surgery was 13.4 PRBC (range 0 – 139) units. Another observational study reported a median transfusion rate of 7 PRBC (range 0 – 44)³ units perioperatively.

CONCLUSION

This study states that blood conservation techniques (pre-operative embolisation, Hypotensive anaesthesia, Intra-operative surgical conservation, use of radio-frequency energy vessel sealing devices (LigaSure®, Valley Lab, Inc., Boulder Colorado) and Computer Assisted Tumor Surgery (OrthoMAP 3D, Stryker Orthopaedics, Mahwah, NJ, USA) navigation have a definite role in reducing the intraoperative blood loss with improved outcome, reduced morbidity and mortality.

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Management of Post Oesophagectomy Respiratory Failure with Noninvasive Ventilation

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Key Words: Post Oesophagectomy, Respiratory Failure, Non- invasive Ventilation

Introduction

Oesophagectomy patients can be fast tracked and extubated on operating table using multimodal strategies thus reducing mortality, morbidity and ICU stay.

Noninvasive ventilation with effective post-operative analgesia can be used to augment spontaneous ventilation improving gas exchange in patients with postoperative respiratory failure thereby avoiding invasive mechanical ventilation and its associated complications.

Case Report

The patient was a 44-yr old gentleman diagnosed with ca of middle 1/3 esophagus. He underwent total oesophagectomy and gastric pull up 25 days after chemotherapy (carboplatin, xeloda) and radiotherapy. Patient is a nonsmoker, nonalcoholic and has no comorbidities.

Preoperative Pulmonary Function Test (PFT) revealed FEV₁ 3.33 L (96% predicted) FEV₁/FVC (58% predicted) indicating mild obstruction. Rest of the investigations was within normal limits.

Preoperative preparation included incentive spirometry, nebulization, chest physiotherapy, antibiotics, and adequate hydration. Low molecular weight Heparin was begun 12 hrs before surgery.

He was pre-medicated IV morphine, induced with Propofol 1.5mg/kg, Atracurium 0.5mg/kg, intubated with single lumen 8 size cuffed Portex endotracheal tube. Thoracic epidural catheter was inserted in T₄₋₅

interspace. Triple lumen CVP catheter of 7 F size inserted in right subclavian vein, left radial artery was catheterized. Patient was maintained on sevoflurane (1- MAC) with FiO₂ 0.5 on closed circuit with controlled ventilation.

Thoracoscopic oesophageal mobilization done in prone position, tidal volume 5ml/kg, airway pressure remained around 28cm H₂O, later positioned supine for gastric pull up and left cervical anastomosis..

Intraoperatively, patient remained hemodynamically stable. Urine output was adequate; normothermia was maintained with warming blankets & warm fluids. Patient received 500ml of colloid and 1 liter of crystalloid. The surgery lasted for 4hrs, blood loss was 500 ml and patient did not require blood transfusion. Twenty minutes before extubation an epidural bolus 5ml of 0.125% bupivacaine given.

On completion of surgery patient was extubated on operating table, had good respiratory efforts, no respiratory distress and was hemodynamically stable. Patient was observed for 30 min and shifted to surgical ICU.

Postoperative Course in ICU

Four hours later patient became tachycardic, with shallow breathing but he was awake, alert maintaining saturation 99% with mask oxygen. Blood gas analysis showed Ph7.2, paCO_2 of 79 mmHg, paO_2 of 247mmhg, bicarb 35mmol/l.

Plan was to use noninvasive positive pressure ventilation with BIPAP mode.

Initial inspiratory pressure was 6cm H_2O , expiratory pressure of 4 cm H_2O , increased 2nd hourly to final pressure of 14/10; oxygen flow maintained 6litre/min to maintain oxygenation.

Noninvasive ventilation was continued for a period of 4 days. Analgesia was maintained with continuous epidural analgesia 0.125% bupivacaine 5ml/hr and fentanyl 20 micogram/hr with IV paracetamol.

Blood Gas Report

	PH	Paco2	Pao2	Bicarbonate
Postoperative	7.2	79mmHg	247mmHg	35mmol/l
Postop day 1	7.3	47mmHg	122mmHg	28mmol/l
Postop day 4	7.3	50mmHg	131mmHg	26.2mmol/l
Postop day 6	7.4	42mmHg	83mmHg	30mmol/l



Post-Operative Day



Post Operative Day 3



Post-operative Day 5

Patient showed clinical signs of recovery, gas exchange improved.

Next day blood gas analysis showed paCO_2 47mmHg paO_2 122mmHg. Right side air entry was persistently reduced. Patient continued to receive chest physiotherapy, noninvasive ventilation and had effective pain relief.

Chest CT on postoperative day 5 showed complete collapse of right lower lobe with secretions in right lower lobe bronchus, partial areas of atelectasis in right middle, upper and left medial basal segment, mild right pleural effusion, bilateral ICD in situ with left pneumothorax.

Bronchoscopy was done on post-operative day 6 and secretions were aspirated. Patient continued to remain stable, no hemodynamic instability, sepsis or anastomotic leakage were seen.

Duration of noninvasive ventilation gradually reduced in view of clinical improvement and improved gas exchange. Further, patient was successfully weaned off noninvasive ventilation. Patient was shifted out of ICU on 8th postoperative day.

Discussion

Oesophageal surgeries carry high perioperative mortality and morbidity. Pulmonary complications are most common and implicated in 2/3rd of postoperative mortality. Oesophageal resection is associated with respiratory complications in postoperative period due to inadequate respiratory efforts, handling of lung parenchyma, sputum retention, atelectasis, pneumonia and respiratory distress syndrome. Impact of respiratory complication warrants significant attention.

Management of postoperative respiratory failure requires mechanical ventilation which is associated with patient discomfort, need for sedation, ventilator associated pneumonia, sepsis, ventilator dependency, disuse atrophy of respiratory muscles, difficulty to wean, increased cost, morbidity and mortality.

Noninvasive ventilation is delivery of ventilator support with pressure targeted CPAP/BIPAP via face mask or nasal mask without use of invasive airway device. It is a safer alternative to invasive ventilation in patients with acute postoperative respiratory failure.

Noninvasive ventilation cannot be used in patient who are uncooperative, confused or hemodynamically unstable. Beneficial effects are due to improved lung inflation, preventing alveolar collapse, improved FRC and reduced work of breathing.

Noninvasive ventilation can be considered as a prophylactic and therapeutic tool to improve gas exchange in postoperative patients and also for respiratory failure after extubation in selected patients.

Monitoring is very essential during NIV not only to optimize pressure settings but also to detect any deterioration and to assess the need for invasive mechanical ventilation.

Thoracic epidural analgesia (TEA) in addition to providing intraoperative and postoperative analgesia attenuates catabolic response to surgery, lowers incidence of pulmonary morbidity, improves respiratory efforts, decreases cardiac metabolic demand, and reduces risk of thromboembolic complications.

Postoperative multimodal strategy that includes effective neuraxial analgesia, early extubation, lung expansion manoeuvres, chest physiotherapy and noninvasive ventilation can prevent respiratory complications. Several studies have shown increased benefits of noninvasive ventilation in post oesophagectomy patients with lower reintubation, lower frequency of respiratory failure, ARDS and reduced ICU length of stay, improved gas exchange, and there were no problems with suture integrity/anastomotic leakage.

In our case scenario patient was successfully managed with non-invasive positive pressure ventilation thus avoiding reintubation, invasive ventilation and its complications.

Conclusion

Noninvasive ventilation can be used as an effective alternative to invasive mechanical ventilation in management of post-oesophagectomy patients with respiratory failure.

Typical challenges of invasive mechanical ventilation can be avoided, besides lowering morbidity, length of stay and mortality of such patients.

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Management of A Liver Transplant Recipient Posted for Laser TURP – A Case Report

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Key words: Liver transplant recipient, laser TURP, immunosuppressants

Liver transplant recipients are a set of patients who need specialized care after the transplant procedure. The general condition of such patients depends on the age, presence of co-morbid conditions, such as cardio-pulmonary disease, renal diseases, diabetes, malnutrition and the nature of liver disease. The outcome is also affected by the quality of donor liver, the level of difficulty faced during transplant, post-operative infection and the side effects of immunosuppressive agents used.¹

Post liver transplant, the recipients are prone to a number of complications including hepato-biliary complications, coagulopathies, infections, acute and chronic rejections, electrolyte imbalances, ascites and fluid retention, renal and neurological complications, disease recurrence (Hepatitis B and C) and malignancy of the transplanted liver.

Laser TURP involves the vapo-resection of the prostate using diode laser (180W 980nm) with normal saline as the irrigant. Reduced blood loss, reduced hospital stay and early discharge are the reported advantages of laser TURP over regular TURP.

It is a challenge to manage a post liver transplant patient coming for laser TURP and requires a team with adequate experience in handling such patients.

An online search revealed no documentation of a post liver transplantation patient undergoing laser TURP. Herewith we are reporting such a rare case.

Introduction

Liver transplant recipients are a set of patients who need specialized care after the transplant procedure. Such patients coming up for laser TURP can pose a challenge to both anaesthesiologists and surgeons equally. They are prone to post liver transplantation complications including problems due to primary and secondary rejection, their immunocompromised state, adverse effects of immunosuppressants, infections and renal failure.

Pre-existing infections may be aggravated in such patients. In this case report the dormant urinary tract infection had flared up in the post transplantation period and hence had to be posted for laser TURP. Utmost care is required during the perioperative period including immunosuppressant readjustment, managing the co-existing diseases, maintaining strict aseptic techniques, hemodynamic stability and prevention of TUR syndrome. Here is a detailed report of one such case.

Case report

A 68 year old male patient, diabetic and hypertensive presenting with voiding LUTS (Lower Urinary Tract Symptoms) was posted for laser TURP. He had received liver from a cadaveric donor four months earlier for cryptogenic cirrhosis with decompensation.

The patient suffered from intractable UTI a year earlier to liver transplantation. He was treated with successive antibiotic regimens based on culture and sensitivity for a total of three months. He was then listed for transplantation.

Transplantation was uneventful and the patient was discharged on post-operative day fourteen. The urinary catheter was in situ for three days. Two months later he developed epididymo-orchitis. He was treated with antibiotics and modulation of immunosuppressants for fifteen days. In view of repeated urinary infections, laser TURP was planned.

Pre-operatively patient was on antihypertensives, oral hypoglycemics, aspirin 75mgs, and immunosuppressants Tacrolimus and Mycophenolate Mofetil (MMF). Investigations including complete blood count, liver function tests, coagulation profile, ECG and echocardiogram were done and reported as normal. Blood and urine cultures were negative. Serum creatinine and potassium levels were slightly elevated. Blood levels of tacrolimus was also reported as normal.

Mycophenolate mofetil was stopped three days before surgery, to avoid overt immunosuppression pre, during and post procedure. Tacrolimus was not given on the day of the procedure. Steroids in the form of hydrocortisone was administered as a stop gap immunosuppressant. After recovery from the procedure, the immunosuppressants were restarted.

Antihypertensives were continued in the peri-operative period. Antibiotic cover was given with Piperacillin and Tazobactam.

After overnight fasting, patient was started on normal saline infusion on the morning of surgery. The risks and benefits of different anaesthesia techniques were discussed. Taking into consideration polypharmacy of general anaesthesia, transplanted liver and normal coagulation profile, spinal anaesthesia was decided upon.

Cockpit drill was conducted and the patient placed in the lateral position. Under strict aseptic precautions lumbar puncture was done with a 27G spinal needle (Quincke). 2.5ml of bupivacaine 0.5% heavy injected after confirmation by draining clear CSF.

Laser TURP was completed in the lithotomy position in 60 minutes. Intraoperatively vitals were stable. A total of 1500ml of crystalloids were infused. Post-operatively patient was monitored in the ICU for 24 hours and then shifted to ward. The post-operative period was uneventful and the patient was discharged on the third post-operative day.

Discussion

Liver transplant recipients are vulnerable to various complications in the early and late post transplantation period. These include primary nonfunction, stenosis and thrombosis of the hepatic artery and the portal vein, hepatic outflow obstruction, biliary stenosis or leak, bleeding, ascites and fluid retention, infection, acute and chronic rejection, electrolyte imbalances and metabolic abnormalities, renal dysfunction, neurological complications, malignancy and disease recurrence (hepatitis B and C).¹

In addition, side effects of immunosuppressants, steroids and other medications that the patient is on, also to be considered. Calcineurin inhibitor Tacrolimus along with inosine monophosphate dehydrogenase inhibitor mycophenolate mofetil is used as an immunosuppressant to prevent graft rejection after liver transplantation. The side effects of tacrolimus include nephrotoxicity, neurotoxicity, hyperglycemia and hyperkalemia.² Tacrolimus is metabolized via the cytochrome p450-3A. Combination therapy with tacrolimus and MMF may significantly reduce the incidence of acute liver allograft rejection, allow a significant reduction in tacrolimus dosage, and decrease the incidence of nephrotoxicity.³

Infections play a very important role in the morbidity and mortality of immunocompromised patients.⁴ Infections must be ruled out before surgery. However reducing the dose of immunosuppressants may trigger the risk of rejection. It should be in mind that immunosuppressed patients may not present the typical signs and symptoms of intra-abdominal sepsis – fever and leukocytosis. Physical signs of peritonitis may be absent.⁵

TURP to treat BPH has been the gold standard for decades. It is still considered the standard by the Canadian Urological Association, and as the “benchmark for surgical therapies” by the American Urological Association. Moreover, the European Urological Association considers TURP “the treatment of choice for prostates sized 30 to 80mL.”⁶ The complications of TURP include failure to void, surgical revision, urinary tract infection, bleeding requiring transfusion and TUR syndrome.⁷

Laser treatment for prostatic hyperplasia involving vapo-resection of the prostate with a diode laser using normal saline as the irrigation fluid. Laser vaporization is an effective technique when compared to TURP, producing equivalent improvements in flow rates and IPSS with the advantages of markedly reduced LOS, DOC and adverse events.^{8,9} The high power diode laser (150 W, 980nm), has a rapid ablation rate and a thinner coagulation zone.¹⁰ It is virtually a bloodless surgery. The light weight of the laser generator makes its transportation easy. As the laser is invisible, surgeon’s vision is not obstructed. Urinary retention is not common but the patient should be informed that mild to moderate irritative symptoms may arise during tissue sloughing, which usually lasts no longer than 2 weeks. Common complications are retrograde ejaculation (32%) and dysuria (9.3-23%).

Anticoagulants may be continued as no difference in perioperative bleeding were observed in patients on clopidogrel or acetyl salicylic acid.^{11,12,13} Warfarin may be stopped two days before surgery and restarted on the first post-operative day.¹³

Conclusion

Liver transplant recipients coming for laser TURP is a very rare occurrence. Managing such patients is a challenging task for the surgical and anaesthetic team. We have managed such a patient successfully, taking into consideration the complications associated with a newly transplanted liver, his immunocompromised state and the needs of laser TURP.

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A Challenging Paediatric Case For Non-Operating Room Anaesthesia (NORA)

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Keyword: Procedure sedation/anesthesia, Non-operating room Anaesthesia (NORA), Multiple session of anesthesia

Introduction:

The performance of diagnostic and therapeutic procedures in NORA for children is safer and successful when the patient does not move and when any associated pain and anxiety are effectively controlled.

Pharmacological and non-pharmacological intervention that consider the child's developmental status and the clinical circumstances are often required to meet these goals.

Case study:

A child aged two years eight months was diagnosed with disseminated ATRT (Atypical Teratoid Rhabdoid Tumor). He had undergone craniotomy in December 2014, followed by 4 cycles of chemotherapy and later a VP shunt procedure for hydrocephalus. Three days after the VP shunt procedure the child developed severe headache. An emergency CT done under IV sedation showed progression of disease.

After discussing in multi-disciplinary meeting, planned for radiation (IGRT) for brain and spine. He underwent planned MRI followed by first fraction of radiotherapy in the form of IGRT under anesthesia (using iv fentanyl 1-2 mcg/kg, iv midazolam 0.05 mg/kg and iv propofol 1-2 mg/kg) along with continuous monitoring of vitals (pulse, SpO₂, ETCO₂) in radiation suite. Immediately after the radiation child developed generalized seizures, started with IV midazolam (0.1 mg/kg) and stabilized and shifted to ICU. Subsequently patient developed sepsis and went into septic shock which was successfully treated. Radiation was postponed for the time being.

After a month he was planned again for radiation, IGRT (25 -30 fraction). Considering the history of seizures and sepsis, he was intubated and central venous line was placed. After first fraction of radiation, again he developed seizures and was stabilized with iv midazolam. After 10 fractions of radiation and subsequent MRI, he was successfully extubated. Rest of remaining fractions of IGRT was done using short acting pharmacological agents (iv fentanyl 1 mcg/kg , iv midazolam 0.05mg/kg and iv propofol 1-2 mg/kg) with continuous remote haemodynamic non -invasive monitoring of patient, keeping crash cart trolley ready in case of emergency reintubation.

Discussion:

A technique of administering sedative or dissociative agents with or without analgesic to induce a state, allows the patient to tolerate unpleasant procedures while maintaining cardio-respiratory function. Procedural sedation and analgesia is intended to result in a continuous depressed level of consciousness that allows the patient to maintain airway control independently and continuously. Specifically, the drug, doses and techniques used are not likely to produce a loss of protective airway reflexes.

The unique feature of sedation outside OR are

- Environment- new place, remote area, narrow lanes, low lighting
- Personnel- not trained or less number
- Equipment- anesthesia machine may be present or absent, old or not used for long time

- Isolation of the anesthesia/ sedation team
- Sometime difficult to access the airway due tight fitting mask, position of patient
- Unavailability of immediate support in case of complication.
- Post anesthesia care not available

Complication from sedation such as respiratory depression or cardiovascular instability are most likely to occur within 5-7 min after intravenous medication and immediately after the procedure when stimuli associated with procedure are removed.

Unexpected respiratory depression or unconsciousness are a consequence of synergistic interaction of benzodiazepine and opioids combined with inter individual pharmacological variability.

The availability of short acting sedative along with accurate remote non-invasive monitoring and improved sedation training program has enabled effective and safe management of procedure which minimize physical pain, discomfort and psychological trauma with maximal amnesia, controlled anxiety and movement to allow safe performance of procedures.

Beside pharmacological intervention, nonpharmacological intervention like verbal reassurance, distraction technique, desensitization, positive reinforcement and relaxation are using independently or along with sedative drugs.

Regardless of the clinical scenario or medication used, pre-sedative assessment, fasting guidelines, appropriate monitoring of the patient respiratory and physiologic function is mandatory to rapidly identify respiratory compromise.

Conclusion

Procedural sedation is one method that employs dynamic medication titration to decrease cardiopulmonary depression. Procedural sedation should be avoided in children for whom the risk of sedation overweighs the benefits.

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INTERVENTIONAL PAIN MANAGEMENT

Breast Pain Syndrome Post Breast Surgery

Dr. Vindya K, Dr. Raghavendra. R & Dr. Amelia Michael

INTRODUCTION:

Breast cancer is the commonest cancer in India among women ⁽¹⁾. While surgery and surgical procedures have become specialized involving as little tissue damage as possible, the incidence of Post Mastectomy Pain Syndrome (PMPS) is of varied incidence, ranging between 25% and 60% ⁽²⁾.

Pain is localised to axilla, upper arm, and breast and chest wall. As defined by International Association for the Study of Pain, post mastectomy pain syndrome is a chronic pain in the above distribution beginning after breast surgery and persisting beyond three months after the surgery once other causes of pain such as infection have been eliminated ⁽³⁾. The pain has been described as a neuropathic pain commonly attributed to nerve injury during surgery. Several risk factors have been put forward for the development of PMPS including age, pre-operative breast pain, psycho social status, type of surgery and type of analgesia. The pain affects the quality of life (QOL) of individuals and causes heavy economic burden on the family ⁽⁴⁾.

Inclusion criteria

- Age >18yrs
- Evidence of metastasis excluded
- Case sheets for follow up.
- Access to telephonic conversation

Method and Methodology:

The survey was approved by ethical the committee of Institution. Sample population included patients who underwent breast surgery between January 2012 and June 2012. Verbal consent and permission to view medical records were obtained from all

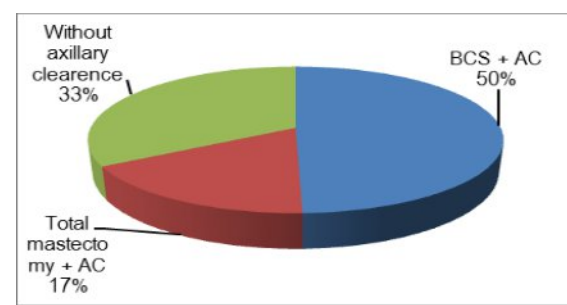
subjects before enrolling into the study. A retrospective telephonic questionnaire survey was performed from the hospital. The interviewer was a Clinical Nurse Specialist from the department of Pain and Palliative Care. Responses from subjects were clearly documented.

Results:

A total of 100 patients were contacted through the phone. All patients consented to participate in the survey.

DISTRIBUTION OF SURGERIES:

The pie chart given below shows the distribution of surgeries performed. The most commonly performed surgical procedure was breast conservative surgery (BCS) with axillary sampling, constituting 50% of the surgeries.



COMPARISON OF PAIN IN DIFFERENT SURGICAL GROUPS:

A total of 32 patients (28.8% of 100 patients) reported pain as a consequence of treatment. (p=0.01). 22 of the 32 (66%) patients who reported pain, belonged to the group who underwent BCS with axillary clearance.

Surgical Group	Pain		Total
	Absent	Present	
BCS with Axillary Clearance	33 (60.0%)	22 (40.0%)	55 (49.50%)
Mastectomy + Axillary Clearance	13 (68.4%)	6 (31.6%)	19 (17.10%)
Others without Axillary Clearance	33 (89.2%)	4 (10.8%)	37 (33.33%)
Total	79 (71.2%)	32 (28.8%)	111 (100.0%)
Chi Square: 9.270, df:2, p= 0.01			

DISCUSSION:

The aim of this retrospective survey was to determine the prevalence of PMPS in our institution. The result showed that the incidence was 28.8%, which is similar to other studies⁽⁵⁾.

The table below summarises the surgical procedures performed for breast cancer.

Surgical procedure	Tissue removed
<i>Mastectomy</i>	
Radical Mastectomy	Skin and breast tissue, all axillary lymph nodes, pectoralis major and minor muscles.
Modified radical mastectomy	Skin and breast tissue, all axillary lymph nodes
<i>Breast conserving surgery</i>	
Lumpectomy	Breast lump and margin of normal tissue
Lumpectomy + axillary node dissection	Breast lump, margin of normal tissue, axillary nodes
Lumpectomy + Sentinel node biopsy	Breast lump, margin of normal tissue, axillary nodes only if positive sentinel node biopsy

Breast conserving surgeries have evolved rapidly in recent years with lumpectomy with sentinel node sampling being the most recent and least invasive option. However, it is noted in recent studies that despite breast conserving surgery there is increasing incidence of persistent post-surgery pain. The pain could be described as being either nociceptive (arising from breast tissue/ligament/muscle/fascia⁽⁶⁾) or neuropathic in origin. Neuropathic pain following breast surgery could be classified as shown in the table below.

Phantom breast Pain	Sensory experience of a removed breast that is still present
Intercostobrachial Neuralgia	Pain accompanied by sensory changes along distribution of intercostobrachial nerve
Neuroma pain (includes scar pain)	Pain in region of scar on the breast/chest/arm that is provoked or exacerbated by percussion
Other nerve injury pain	Pain outside the distribution of the intercostobrachial nerve.

The incidence of PMPS is underestimated. Multiple barriers prevent patients from reporting their pain to their physicians. Bokhari et al. conducted a prospective, quantitative, longitudinal pilot survey to determine the prevalence rate of neuropathic pain after breast cancer surgery. This was performed in patients before surgery and at 2 days, 10 days, and 3 months and it explored potential risk factors associated with the development of neuropathic pain. Twenty-three percent of the patients developed post breast surgery pain. Younger age (younger than 50 years old), more invasive surgery, acute postoperative pain, adjuvant radiotherapy or chemotherapy and less analgesic use during the acute postoperative period were factors associated with the development of pain in this group of individuals⁽¹⁰⁾.

Under reporting of pain is also a major contributing factor towards persistent pain. Through the telephonic interview the following factors were factors contributing to under reporting of the pain. These findings are consistent with other studies.

1. Ongoing pain after treatment is an unexpected reality and induced anxiety about cancer recurrence and hence reporting it would be accepting this possibility⁽⁷⁾.
2. Fearing that concerns about pain will be ignored⁽⁸⁾. Patients “normalized” their pain in various ways: they considered it either as a necessary step on the road to recovery, as the proof of treatment efficacy, or as a permanent condition one must learn to live with⁽⁹⁾.

Conclusion:

The clinical causes of PMPS can be multifactorial. Education of the surgery to be performed and preparation of the patient for the post-operative period helps alleviate anxiety. Optimizing peri-operative and post-operative pain management could go a long way in preventing chronic neuropathic pain following breast cancer surgery. Persistent pain may occur after surgical treatment, chemotherapy and/or radiotherapy. Treatment approaches for post breast surgery pain may include pharmacologic, interventional, and nonpharmacological strategies. Currently therapy for PMPS remains suboptimal, however, it is hoped that a greater appreciation of the diagnosis, evaluation, communication about and management of PMPS would lead to improved overall quality of life of our patients.

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Clinical Nurse Specialist Role In Pain Management

Dr. Lohithashva S O, Dr. Raghavendra.R, Dr. Amelia Michael

Pain has been described by the International Association for the Study of Pain as, 'An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage'. Hence, pain is multidimensional, encompassing physical, emotional, spiritual and psychosocial aspects. It is essential to have an increased awareness amongst patients and medical professionals that timely, appropriate pain management is important to enhance a patient's well-being. A dedicated team with multi-disciplinary input, which aspires for excellence, good evidence based practice and is patient oriented will definitely help their in achieving a good quality of life⁽¹⁾.

Clinical nurse specialists (CNS) are valuable members of this multidisciplinary team and play a pivotal role in providing direct patient care. They coordinate, monitor and evaluate the care provided either on an inpatient, critical care, outpatient, daycare, and bone Marrow transplant unit or homecare basis. CNS's act as a link amongst the various members of the multi-disciplinary team. They supervise ward nurses who are responsible for accurate documentation after assessing pain intensity (5th vital sign), administering regular and rescue medication, and monitoring their efficacy and adverse effects. As the health care professionals involved in around-the-clock care of patients, registered nurses are in a unique position to promote pain relief. They require a sound knowledge of the ways of assessing and reporting pain equally among patients who are able to report pain and those unable to do so (eg. ventilated patients, children, patients

with dementia)⁽²⁾. Therefore, continued nurses' education by CNS's should be an integral part of the pain management ⁽³⁾. Educating patients about the pain scoring system is essential coupled with the knowledge that prompt reporting of the pain to the attending staff is essential in having good pain relief⁽⁴⁾.

A typical day of a Pain CNS begins with collecting the names of individuals who have been referred or require review for acute or chronic pain management. Skills include:

- Management of acute pain crisis with opioid titration in the ward or emergency rooms under the supervision of consultant. This skill being backed by thorough knowledge of the medications used.
- Managing Epidural analgesia (EA) or Patient Controlled Analgesia (PCA), Infusion pumps, syringe pumps in the hospital.
- Ward rounds with consultant followed by ward rounds twice a day and as required to assess the effectiveness of the analgesia and make alterations as required under supervision.
- Advice given to patients on pharmacological and non-pharmacological methods to help improve their pain.
- Explanation of oral medications as prescribed after opioids rotation following successful titration of pain.
- Offer advice to help patients cope with the most common side effect of pain medication – constipation.
- CNS is in a position to develop rapport and trust with the patient and the family.

- Clear communication thus improving the patients understanding of their condition, relieving anxiety hence achieving better pain control and promoting patient comfort and wellbeing.

Pain is a debilitating factor in the lives of our patients, prolonging their recovery time from illness or surgeries as well as, incurring huge economic strains. Failure of health care workers to assess pain and their insufficient knowledge of pain management are barriers to adequate treatment. In order to provide best care for our patients it is essential to have the knowledge and right attitude in pain management (5). Regular training programs coordinated and facilitated by the CNS are essential in overcoming this barrier (6). Clinical Nurse Specialists in pain are a force essential for any institution in providing effective pain management thus assuring good quality of life.

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Yoga As An Adjuvant To Treat Cancer Related Neuropathic Pain

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Abstract:

Pain is the most debilitating and disastrous experience which has remained unreported and under treated. Neuropathic pain requires increased analgesics, intensive treatment and higher doses of opioids for longer duration to achieve stable pain. Psychological distress and patient's own coping strategies can influence the persistence of pain. Non-pharmacological strategies facilitate improvement in neuropathic pain associated with cancer. Yoga is a mind body medicine which has shown to have beneficial effect in managing pain by reducing the psychological distress in cancer patients.

Introduction:

Cancer-related distress, clinical depression, and other mood disorders are seen in patients with active cancer. Pain, fatigue and emotional distress are the most commonly co-occurring symptoms. Among these, pain is the most debilitating and disastrous experience which has remained unreported and under treated (1).

Prevalence of pain averages between 53% - 59% across the cancer continuum from diagnosis through survivorship or end of life (2). Barriers to communicate regarding pain include fear that pain is an a) indication of disease progression or recurrence b) not wanting to seem weak or to have treatment reduced c) not wishing to disappoint or distract their oncology provider d) not liking the adverse effects of treatment, not wishing to appear to be seeking drugs, or not believing something can be done to relieve cancer pain e) addiction to medication and side effects (3).

Two types of pain are encountered by cancer patients' namely nociceptive and neuropathic pain. Neuropathic pain is defined as "pain

initiated or caused by a primary lesion or dysfunction in the nervous system" or "pain caused by a lesion or disease of the somatosensory nervous system" by International association for study of pain (4).

Many studies have shown neuropathic pain to be more common ranging between 19-39% (5). Treating neuropathic pain is still a challenge due to limitations in diagnostic tool (6). In spite of repeated investigations the cause of neuropathic pain remains unknown. Increased analgesics, intensive treatment and higher doses of opioids and adjuvants may be required for more number of days to achieve stable pain (7). Such unrelieved pain increases the risk of psychological distress and desire for hastened death (3).

Patient's own coping strategies also can influence the persistence of pain. Several studies have demonstrated that cancer patients who engage in pain catastrophizing (ruminating about pain and feeling helpless about managing pain) are more likely to experience intense pain (8). Hence, it is imperative to identify the individuals with neuropathic pain early and treat appropriately (6).

Neuropathic pain cannot be treated solely with pharmacological methods. Addressing psychological and psychosocial issues through non-pharmacological strategies (e.g. massage, acupuncture, fitness, and mind-body techniques) have shown to facilitate improvement in neuropathic pain associated with cancer (9, 10).

Yoga and neuropathic pain:

Yoga as a complementary and mind body therapy is practiced increasingly in both Indian and western populations. Yoga is an ancient Pan-Asian science and a way of life that includes maintaining various postures,

regulated breathing, and meditation. The word “yoga” comes from Sanskrit and means “to yoke” or join.

Yoga offers various levels of approaches to relax, energize, remodel and strengthen the body and psyche. Beginning with the physical body, which for most people is a practical and familiar starting point, it eventually influences all aspects of the person: vital, mental, emotional intellectual and spiritual. This is often achieved by a combination of asanas (physical postures), pranayama (breathing techniques), yogic relaxation and meditation.

Large numbers of studies have used yoga as mind body medicine to alleviate chronic pain. Although there is no direct evidence for yoga to relieve neuropathic pain, the mechanisms by which yoga can help modulate pain remains the same.

In chronic pain, it is noticed that there is high contribution of the static load, due to habitual deep muscle tension adversely affecting microcirculation within muscles and the underlying viscera. Asanas have compressive / de-compressive effects on the blood flow and lymph flow of underlying tissues through abdominal muscular stretches and contraction in combination with appropriate spinal movements. There is evidence of endogenous opioid release during sustained stretching of muscles. The internal awareness developed with practice of yoga help the individual recognise the thoughtful stress response, emotions and ruminative feelings and disassociate ones attention from these process thereby reducing catastrophizing and inherent psycho physiologic sensitivities associated with these thoughts.

Deep breathing especially Yogic breathing that focuses on diaphragmatic breathing is known to increase blood Oxygen and reduce muscle fatigue and hypoxia. The slowing down of breathing with emphasis on

exhalation leads to increased parasympathetic response that restores homeostasis and causes reduction in sympathetic arousal. This could be useful in reducing allostatic load that can exacerbate pain.

Further, relaxation and mental awareness are known to alter the perceptions, and mental responses to both external and internal stimuli, slow down reactivity and responses to such stimuli and instil a greater control over situations in the participants. This could be particularly useful by participants to modulate pain.

Meditation practice facilitates an attention stance known as detached observation. This causes an “uncoupling” of the sensory dimension of the pain experience and reduces the experience of suffering via cognitive reappraisal. This is evident from a study on mindfulness meditation in treatment refractory chronic pain that showed decrease in pain by 50% in those who practice it (9, 11, 12).

Conclusion:

Patients learn to cope up with pain if addressed early. Yoga may be used as an adjuvant along with conventional medicine to reduce psychological distress and enhance patient’s ability to cope up with pain.

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Role of Non Pharmacological Interventions In Cancer Pain

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Pain is an unpleasant, sensory, and emotional experience, originating from any site in body, manifesting potential tissue damage, and covering all past incidences of the person according to International Association for the Study of Pain (IASP) ⁽¹⁾ Pain in cancer patients may be due to the disease infiltrating tissues or due to inflammation induced by cancer directed treatment itself. Whatever may be the cause of pain its one of the commonest symptoms that has remained unreported and under treated. Pain is known to significantly impact quality of life (QoL) in 69% of cancer patients in spite of using advanced analgesic management. In spite of stepwise pharmacological treatment established by World Health Organization (WHO), prevalence of cancer pain still exists amongst 56-64% of patients. It affects patient's perception on effect of therapy, disease status, quality of services and even survival ^(2,3,4) . Pain is an unpleasant sensation that is not limited to the nerve endings but encompasses the experience of the same by the individual modulated by his perceptive, emotive and psychosocial influences from his immediate environment.

Pain is also a result of increase in inherent sensitivity of the nervous system which negatively influences tension in the musculoskeletal system, patterns of breathing, behaviour, emotions and neuroendocrine homeostasis thus affecting individual's quality of life. Stress resulting in allostatic load, catastrophizing thoughts and emotions and affective states contribute to exacerbate pain by increasing pain sensitivity by a variety of mechanisms. Total pain therefore is a result of both central and peripheral modulation of pain.

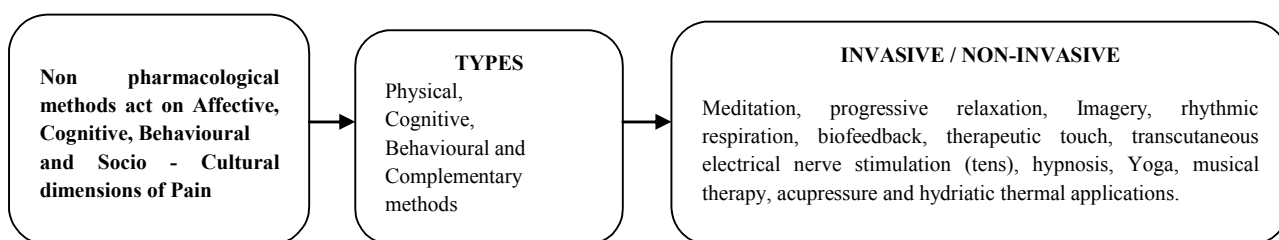
About 50-70% of the cancer patients suffer from uncontrolled pain associated with anxiety, depression, suicidal tendency and fear pain more than death ⁽⁵⁾ .Therefore, anticancer treatment, symptomatic pain control, rehabilitation, and psychiatric support are the essential elements of the treatment for the patient with cancer pain ⁽⁶⁾ . Among them, sensitivity to the psychological needs of the patient is the hallmark of good pain management since psychological factors influence both the experience of pain, response and intensity to pain experience and treatment. Patients with moderate pain are good candidates for psychological learning mechanisms to cope with impact of pain ^(7, 8) . On the whole management of total pain involves strategies that help in both central and peripheral modulation of pain.

Pain-related quality of life has been classified into three variables of well-being corresponding to the bio psychosocial representation, i.e., physical well-being; psychological well-being (i.e, cognitions, affect, spiritual factors, coping, communication, and the meaning of pain and cancer); and interpersonal well-being (eg, social support, role functioning). According to gate control theory, descending cortical inputs that affect pain perception include psychological and psychosocial variables such as beliefs about pain, emotions, reactions to stress, and cognitions. Therefore, interventions that target modification of these factors can change pain perception and experience ⁽⁹⁾ .

According to WHO guidelines, combination of pharmacologic and non-pharmacologic treatment modalities for cancer pain is the standard of care ⁽⁹⁾ . Currently CAM (Complementary and alternate medicine) is the most widely used non-pharmacological intervention used by large proportion of cancer pain patients due to dissatisfaction

with conventional medication, desperation, compatibility between the philosophy of CAM and patient's own belief and wish for more control over one's own health. Although evidence of CAM in relieving pain of cancer patients seems insufficient, CAM therapies are beneficial in increasing QoL, sleep, mood, reduce stress and anxiety⁽⁵⁾.

The table below shows the types of CAM used to treat cancer pain.



myofascial pain, neuropathic pain, nociceptive pain and vasomotor pain syndromes such as migraine. There is also evidence to show that acupuncture has the potential to produce rapid and effective analgesia when needles are inserted deeply enough and manipulated sufficiently. For cancer break through pain this represents a possible adjunctive treatment and consideration should be given to administering acupuncture alongside 'rescue' doses of medication to 'kick-start' the

A) PERIPHERAL THERAPIES

This involves stimulating the patient's skin and peripheral somatosensory nervous system. The skin stimulation techniques include hot- cold treatments, exercise, positioning, movement restriction-resting, acupuncture, hydrotherapy, TENS, massage and therapeutic touch. When used in an appropriate manner these local methods are believed to be effective on secondary pathologies such as inflammation, edema, progressive tissue damage, muscle spasm and function loss which takes part in acute pain⁽¹⁰⁾.

i) Acupuncture

Acupuncture is a component of Traditional Chinese Medicine (TCM) accepted as a scientific treatment method that provides the body to restore its balance by means of stimulating some special points on the body with needles. It can be explained by Gate control theory, which states that sensory stimulant (for eg back pain), can be suppressed by another stimulant (pricking a needle) within the neural system. Acupuncture has been found to be useful in various chronic pain syndromes consequent to tissue damage and inflammation such as

analgesic response before the medication takes effect Cochrane review evaluated evidence for the effectiveness of acupuncture in reducing pain associated with cancer or its treatment, or both. However, there was insufficient evidence to judge whether acupuncture is effective in relieving cancer-related pain in adults^(10, 11).

ii) Massage

This involves manipulation of the body's soft tissue using various manual techniques and the application of pressure and traction. The peripheral receptors are stimulated which reaches the brain through spinal cord. Massage seems to increase well-being through the reduction of stress and anxiety levels, and thus may contribute to pain control⁽¹²⁾. Studies have shown significant improvement in anxiety, emotional distress, abdominal discomfort, nausea and pain⁽¹³⁾. Another Cochrane review has concluded that massage therapy confer short-term benefits on psychological benefits, with effects on anxiety supported by limited evidence⁽¹⁴⁾.

iii) Transcutaneous electric nerve stimulation:

The TENS unit delivers low-voltage electrical stimulation to leads which are placed over the skin on or near the painful sites. Though specific guidelines for cancer pain do not exist, TENS has been tried in cancer patients with mild pain. However, Cochrane reviews on 3 high quality studies show inconclusive evidence for benefit from TENS in modulating cancer pain^(15,16).

iv) Reflexology

The use of manual pressure applied to specific areas, or zones, of the feet (and sometimes the hands or ears) that are believed to correspond to other body areas or organs. Pressure is applied to these reflex points by special hand and finger techniques which relieves stress and bring about physiological changes and thereby reduction in pain perception. It is stated in the literature that reflexology is used especially for reducing end stage cancer pain and side effects of chemotherapy and to increase living quality⁽¹⁷⁾.

B) CENTRALLY ACTING THERAPIES:

i) Yoga

Yoga is an ancient healing system, inclusive of various asanas or poses with breathing techniques and meditation to assist in the movement and balancing of life force energy or prana. Standard psychotherapy approaches do not include non-cognitive resources such as body and breathe awareness, postures, meditation or spiritual exploration. It is here that complementary and alternative medicine approaches such as yoga may be helpful⁽¹⁸⁾. The factors that are important while performing yoga are maintaining a relaxed mental attitude and developing an inner awareness. This is often achieved by a combination of asanas, pranayama, yogic relaxation and meditation. It is an ancient Indian science that has been used for therapeutic benefit in numerous health care concerns in which mental stress was believed to play a role⁽¹⁹⁾.

Though a lot of evidence supports use of yoga as an adjunct treatment for cancer patients and survivors yet studies on Yoga contributing in improvement of pain scores are scant. However, several reviews and meta-analysis suggest that yoga contribute to improvement in sleep, mood and QoL, depression, emotional function and anxiety⁽²⁰⁾. There have been reports showing that yoga help in reducing postoperative pain, improve antitumor immune outcomes and reduce pro-inflammatory cytokines⁽²¹⁾.

ii) Taichi

Tai chi chuan is an ancient Chinese healing martial art form consisting of a series of slow-paced fluid-like movements and stretches that increase the flow of the “chi”—the life force energy—To prevent stagnation and blockages that manifest as illness and disease. Tai chi promotes wellness of the mind, body and spirit. Tai chi has shown to improve decrease the severity of side effects of cancer and chemotherapy⁽²²⁾.

C) PSYCHOLOGICAL INTERVENTIONS

Patients with cancer use many strategies to manage pain, with catastrophizing associated with increased pain and self-efficacy associated with lower pain. Effective methods included education (with coping skills training), hypnosis, cognitive behavioral approaches, and relaxation with imagery. Many included cognitive and behavioral elements. Cognitive behavioral therapy (CBT) includes a family of interventions teaching patients to respond to pain awareness with a shift in their thoughts and/or coping behaviors. Cognitive training focuses on reframing pain-related catastrophic thoughts. Behavioral training teaches patients to use adaptive behaviors including engaging in distracting activities, pacing activities, and appropriate use of medications or physical modalities such as heat, ice, or movement. Behavioral approaches such as relaxation, imagery not only provide physiologic benefits but also add competing sensory input to the brain,

which can shift thoughts and emotional responses. Related strategies shift focus away from pain, as with hypnosis⁽²³⁾.

i) Hypnosis

Hypnosis is an increasingly used approach to symptom management in patients with cancer. It typically involves the clinician inviting the patient to focus his or her awareness and use his or her imagination to experience beneficial changes in symptoms and emotional responses. Hypnosis has large effect sizes in improving pain, distress, and pace of recovery. It also known to decrease anticipatory anxiety, procedure-related pain, procedure-related anxiety, and behavioral distress^(24,25,26,27).

ii) Relaxation with imagery

Relaxation training involves asking a patient to focus on letting go of muscle tension through awareness and suggestion. Patient is taught to perform self guided imagery where patient learns the skill of diverting their attention. When relaxation with imagery is used for cancer pain, it usually includes imagery and suggestions for shifts in the perception and interpretation of pain signals, thereby directly targeting the reduction of pain. This combination has shown to be the most promising psychosocial intervention in the treatment of cancer pain^(28,29,30,24).

iii) Cognitive Behavioural therapy

This is currently the most widely used psychological treatment for persistent pain involving three steps namely: a) Pain education b) training in one or more coping skills for managing pain and c) home practice with learned skills. Beliefs about pain and cancer are targets of CBT. CBT approaches have been widely tested in patients with cancer for managing depression, anxiety, and quality of life related to diagnosis and treatment^(28,29,32,33,34).

iv) Aromatherapy

This is the controlled use of plant essences, applied either to the skin through massage, added to baths or inhaled with steaming water. It is shown that the aromatic oils reach the lymph system by means of blood circulation and provide recovery by means of intercellular fluids. It is also proposed that the scent receptors in the nose send chemical signals via olfactory nerve to the limbic region and therefore affects a person's emotional responses, heart rate, blood pressure and breathing. Aromatherapy/essential oils may be used by cancer patients for a short-term benefit to reduce anxiety, depression. It is known to improve sleep patterns, well-being and better pain control^(35,36).

v) Music therapy

Research has shown that music therapy is best for reducing short term pain after surgery. Music therapy may affect stress hormone levels, improve brain waves and brain circulation. Further music-based interventions are known to have positive impact on cancer pain, anxiety, mood disturbance, and QoL in cancer patients^(37,38).

Conclusion: Use of these non-pharmacological approaches in the oncology setting can help mitigate pain and distress in cancer patients undergoing cancer directed treatment. Identifying conditions and patients who require such therapies is necessitated to alleviate pain and improve quality of life.

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END OF LIFE CARE – Thinking a Head Does it Matter?

Dr. Raghavendra.R, Dr. Amelia Michael.

Introduction:

Everyone eventually dies. And most people don't die suddenly. Why, then, do we give so little consideration as to how we want the end of life to be? Death may be imminent in the short course of a severe acute illness or death may be the end-result of progression of a chronic illness, such as, cancer, advanced chronic lung disease, heart failure, AIDS, nervous system disorders. No matter what the journey towards death, each individual with a life limiting illness has a right to a life free from pain and distress and also the right to a dignified life that includes the process of death⁽¹⁾. Where medical treatment including critical care is unlikely to restore the patient to a meaningful existence, it is the responsibility of the physician to provide effective palliative care. Active therapeutic management of illness and comfort care are two ends of the spectrum of continued care of a patient with a life-threatening illness. Both are appropriate at different points in the patient's disease process. Setting goals appropriate to clinical situations of poor prognosis are an integral part of patient care. At the EOL (End of Life), the goals of treatment should be set appropriate to the clinical condition of the patient. It should shift from cure to comfort. Life support interventions will serve to add to the agony and financial burden rather than providing the serenity and dignity desired according to beliefs and customs. A study conducted by Cipla Palliative Care Institute Pune showed that 83% of people in India would prefer to die at home⁽²⁾ Without a shred of doubt access to palliative and EOLC (End of Life Care) is a human right⁽³⁾.

Where do we stand?

A report on a study by the Economist Intelligence Unit that was commissioned by Lien Foundation ranked EOLC services in 40 countries (30 OECD countries and 10 select countries), from which data were available. The outcomes of quality of death index showed that India ranked the lowest, 40 out of 40 in EOLC overall score⁽⁴⁾. In India, as of 2014, the unmet need for Palliative Care new cases according to the 2014 WHO report, India has attained Level 3b integration that is, Generalized Palliative Care Provision with respect to adult palliative care services and with respect to paediatric palliative care provision, India has attained only Level 2 integration which is the Capacity Building Stage⁽⁵⁾. This shows an overwhelming need for a national palliative care initiative to bridge these gaps preventing our people from receiving proper EOLC.

BEFORE DEATH CARE

What do we need to do?

Aim to achieve a "good death" for any person who is dying,

- Emphasis should be made on quality-of-life and quality of death
- EOLC should be acknowledged as a human right
- Every individual should have the right to a good, peaceful, and dignified death.

What is Good Death?

- To know when death is coming and to understand what can be expected
- To be able to retain control of what happens
- To be afforded dignity and privacy
- To have control over pain relief and other symptom control
- To have choice and control over where death occurs
- To have access to information and expertise of whatever kind is necessary
- To have access to any spiritual or emotional support required
- To have control over who is present and who shares the end
- To have time to say goodbye and control the timing
- To be able to leave when it is time to go and not to have life prolonged pointlessly

How do we achieve this?

End-of-life care is multidisciplinary team approach toward “whole person care” for people with advanced, progressive, incurable or life limiting illness so that they have a dignified life of the best quality possible before they die. The process of care is not just limited to the person who is dying but extends to his/her families and caregivers⁽⁶⁾.

The physician in consensus with all treating professionals should make an honest, accurate, and timely disclosure of the poor prognosis of the patient to the family and the patient if capable. When the fully informed capable patient/family chooses to opt for the overall treatment goal of “comfort care only” option, the physician should explicitly communicate the standard modalities of limiting life prolonging interventions and appropriate consent should be clearly legibly documented and signed.

These include:

- 1) Do not resuscitate (DNR);
- 2) Withholding of life support or non-escalation;
- 3) Withdrawal of life support.

The process of providing a good EOLC follows a sequential series of steps which involves recognizing the dying, EOLC decision-making and communication and initiation and provision of EOLC

Six-step approach in the EOLC process

Identify	“When to initiate” “Whom to initiate”
Assess	Assessment of physical symptoms and distress Assessment of nonphysical issues Assessment of communication needs
Plan	Site of care Review existing care protocol/medication chart and stop all unnecessary - Interventions/medications/investigations Anticipatory prescription writing Communication consensus, consent
Provide	Access to essential medication for EOLC symptom control Dedicated space and round the clock staff Special care needs of the patient and family After death care and bereavement support
Reassess	Ensure adequate control of pain and other symptoms through on- going assessment Document any variance and initiate prompt action
Reflect	Review the care process and identify if there were any gaps EOLC: End-of-life care Improving the EOLC process by constant reflection and mindful practice

Challenges faced in EOLC provision:

Patient Factors:

- Patient/ family’s depth of understanding of patient’s situation and values
- Patient/ family t afraid of what is happening
- Collusion
- Quality of relationship with the patient
- Socioeconomic status
- Ethnicity and religion

Physician Factors:

- Knowledge in medical ethics
- Communication skills
- Depth of understanding of the patient's situation
- Failure to recognize dying
- The consensus within health care team
- Lack of clarity of who takes responsibility for looking after the patient and decision-making (intensivist/ physician/ surgeon/ oncologist)



Most situations of conflict can be resolved by frequent, and repeated team and family conferences. Patients and family are very sensitive to verbal and nonverbal cues during these discussions. It is of utmost importance that the physician/healthcare team practice active listening skills, correct body language, and appropriate empathic responses in order to convey information in a clear, concise, and empathic manner. This will allow for a care plan that results in a good outcome for all concerned.

AT THE TIME OF DEATH:

Professionals should not only possess the knowledge and skills to provide effective end-of-life care, but must also develop the attitudes and interpersonal competence to provide compassionate care at the time of death⁽⁷⁾. The time of death is a time where clarity of procedures and documentation by the staff should be crystal clear. Each moment spent by family within the hospital environment following the loss of their loved one, has a great impact on the memories they retain and this has far reaching implications into the grieving process. Clear communication between professionals, professionals and family along with implicit bedside attitude and behaviour is the key to supporting the family and helping them through the process of grief⁽⁸⁾.

CARE AFTER DEATH

“Death is not the greatest loss in life. The greatest loss is what dies inside us while we live” – Norman Cousins

Care at this stage of the journey of family will stay in the memory of those who outlive their loved one. The patient who has passed on should be treated with dignity and respect. Preparation of the body, the process of the preparation, the transfer to mortuary, respect for personal items and religious customs, are all facets of care that should never be undermined⁽⁹⁾.



BEREAVEMENT CARE

Care provided by us does not end at the death of the individual we cared for. It extends and continues in providing care for the loved one left behind. Bereavement is the process of grieving and letting go of a loved one who has died. A journey working towards making life reordered and meaningful again. The most important part of supporting a bereaved person lies in 'being with' them, listening intently to their story, acknowledging their feelings and guiding them to work towards a new, different and meaningful life without the departed loved one⁽¹⁰⁾. It is also paramount to identify bereaved families who need to be supported by support groups, relatives or volunteers. Identification of individuals with complicated bereavement symptomology should lead to prompt referral for specialist psychiatric support and care.

CONCLUSION

How we die continues to live on in the lives of loved ones left behind. Improving the quality of care of the dying, limiting unnecessary therapeutic medical interventions, providing access to trained palliative care providers, ensuring pain and symptom control all help in achieving 'Good Death'. This in turn helps loved ones in their journey to recovery from bereavement. Improving awareness of EOLC issues through education initiatives would ensure that we take positive steps towards improving the provision of EOLC for our loved ones in India. The IAPC (Indian Academy of Palliative Care) has taken a stand to facilitate this process. It desires that the medical, nursing and allied health undergraduate and postgraduate curricula have dedicated teaching and training time in palliative and EOLC. It also stresses the need for education and empowerment of families and caregivers in EOLC thus empowering the community to support and care for one another.

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CRITICAL CARE

A Case of Lymphomatoid Granulomatosis Masquerading as a Lung Abscess

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Lymphomatoid granulomatosis (LG) is a rare T cell rich, B cell non-Hodgkin's lymphoma which is difficult to diagnose. We present a patient with LG who demonstrated many of the difficulties in diagnosis and highlighted the importance of reviewing the diagnosis if treatment does not have the anticipated effect.

A 39 year old male, long runner, non-smoker presented to another hospital with a 3 month history of weight loss and sweats.

A chest radiograph showed a mass in the left lower lobe and bronchoscopic examination revealed inflammation involving the left lower lobe bronchus.

Washings were negative for organisms and malignancy. A computed tomographic (CT) scan showed a cavitating mass in the left lower lobe with multiple smaller opacities throughout both lung fields.

Percutaneous fine needle aspiration of the mass showed inflammation with necrotic debris. He was discharged but presented 1 week later with fever and rigors and was transferred to HCG hospital.

On arrival he had a cough productive of copious, foul smelling, purulent sputum. His temperature was 40°C. There was no lymphadenopathy or hepatosplenomegaly. Neurological examination was normal. C-reactive protein (CRP) was 59 mg/l. Blood, urine and sputum cultures, white cell count, serum angiotensin converting enzyme, P- and C-ANCA, autoantibody screen, complement, test for HIV, viral screening, and brucella titres were all negative or normal.

A repeat bronchoscopic examination was non-diagnostic. A repeat CT scan showed a 7 cm cavitating lesion in the left lower lobe with an air/fluid level and minor "inflammatory changes" in the right lung.

Empirical treatment for a suspected lung abscess was commenced using intravenous benzyl penicillin, gentamicin, and metronidazole.

Over the next 21 days his pyrexia settled, sputum cleared, and the CRP level normalised. The chest radiograph remained unchanged. Four weeks later his purulent sputum, fever, and raised CRP level recurred. Open lung biopsy was considered, but the thoracic surgical team declined because of the evidence for active infection. Antibacterial therapy was recommenced with intravenous cefotaxime and metronidazole.

As before, there was a good clinical response but without radiological resolution. Further symptomatic relapse occurred once the drugs were withdrawn.

Seven months after initial presentation he deteriorated further. A CT scan showed the left lower lobe cavity unchanged but there were now numerous nodular densities throughout the right lung (fig 1). Repeat bronchial biopsies showed abnormal lymphoid tissue characterised by a polymorphous lymphoid infiltrate containing scattered enlarged blast-like cells.

These stained positively for CD20, a B cell marker, and immunoglobulin rearrangement studies showed clonality. These findings suggested lymphomatoid granulomatosis.

CT scan showing a cavitating lesion in the left lower lobe and multiple opacities in the right lung.

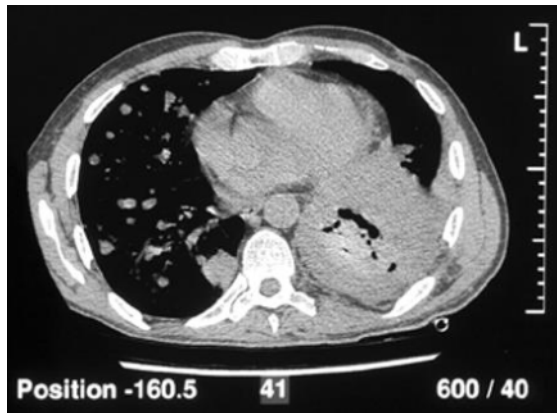


Figure 1

He was treated with methylprednisolone, vinblastine, and cyclophosphamide.

Within 2 weeks his dyspnoea, fever, and right sided radiological abnormalities resolved. The left lower lobe lesion reduced by 40% after three cycles of chemotherapy.

However, he continued to complain of purulent foul smelling sputum. After a fourth cycle of chemotherapy he developed presumed invasive candidiasis and died. The family declined a post mortem examination.

DISCUSSION

Liebow *et al* first described lymphomatoid granulomatosis (LG) as a triad of polymorphic lymphoid infiltrate, angitis, and granulomatosis. It is thought to represent a clonal proliferation of B cells showing angiocentric growth and destructive behaviour. It is similar to post-transplant lymphoproliferative disorders in that Epstein-Barr virus (EBV) is frequently found. Histological diagnosis may be problematic.

Differentiation from high grade non-Hodgkin's lymphoma is aided by the presence of angiocentricity and EBV infection. Wegener's granulomatosis may

have a similar appearance. In our patient *in situ* hybridisation for EBV was difficult to interpret because of the small samples.

As in our case, the typical patient is a male non-smoker in his fifth decade. Presenting features include cough, haemoptysis, and chest pain. Skin rashes and peripheral neuropathy may occur.

Lesions may "wax and wane" and delay in diagnosis is common. Bronchoscopic biopsy is positive in 27% of cases, but open lung biopsy is usually positive and is the diagnostic method of choice.

No well-studied treatment exists, but prednisolone, cyclophosphamide, and more aggressive chemotherapy are generally used.

The prognosis is poor. As a result of the similarities between EBV associated post-transplant lymphoma and LG, interferon $\alpha 2b$ has been tried because of its antiviral, antiproliferative, and immunomodulatory effects. Bone marrow transplantation was successful in one case.

The partial response to antibacterial therapy in our case remains puzzling. We are not aware of previous reports of the benefit of antibacterial therapy in LG.

No significant bronchial obstruction was identified to suggest post-obstructive pneumonia and there was nothing in the history to suggest aspiration. The symptoms suggestive of lung abscess may not have been caused by infection.

Despite repeated sampling, no organism was ever cultured.

In Wegener's granulomatosis chronic antigen load from infection may be aetiologically important, and there is some evidence that co-trimoxazole may improve the nasal manifestations.

A direct immunomodulatory effect of antibacterial therapy is another potential mechanism that could explain the clinical response in our case.

LG has been associated with diseases manifesting impaired T cell function such as acquired immune deficiency syndrome and Sjogren's syndrome.

HIV testing was negative in our patient. We did not undertake formal tests of T cell function and a T cell defect remains a possible cause for the septic picture.

In our patient the presentation with features suggesting lung abscess and the initial response to treatment strongly dissuaded the thoracic surgical team from intervening. Diagnosis was almost certainly delayed as a result. This case demonstrates the difficulties that may be faced in diagnosing LG, particularly without open lung biopsy, and underscores the importance of reviewing the diagnosis if treatment does not have the anticipated effect.

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Cyclophosphamide-Induced Symptomatic Hyponatremia, A Rare But Severe Side Effect: A Case Report

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Abstract

Cyclophosphamide is commonly used in the treatment of malignant diseases. Symptomatic severe hyponatremia induced by low-dose cyclophosphamide is very uncommon worldwide. We report a case of severe symptomatic hyponatremia that developed in a female breast cancer patient following the first cycle of chemotherapy containing low-dose cyclophosphamide. Her laboratory test showed serum Na of 112 mmol/L. Her hyponatremia was initially treated with sodium bicarbonate. She completely recovered without neurological deficits after slow correction of the serum Na concentration. Although hyponatremia is a rare toxicity it should always be considered during the usage of cyclophosphamide, even if the dosage is low, especially with concurrent use of other medications that impair water excretion, like chlorthalidone. This report describes the first reported case of cyclophosphamide-induced hyponatremia in Qatar

Background

Cyclophosphamide is an alkylating agent which was traditionally used to potentiate vasopressin renal action. Low doses of cyclophosphamide are being used in the treatment of rheumatological disorders, while higher doses are being used for treatment of malignant diseases. Although cyclophosphamide is extensively used in the management of different types of diseases, there have been only a few case reports of cyclophosphamide-induced hyponatremia.

Cyclophosphamide has common side effects such as bone marrow suppression, infection, sterility, alopecia, bladder malignancy, and haemorrhagic cystitis.

However, a less generally known side effect is that intravenous (IV) cyclophosphamide could indirectly cause antidiuretic hormone release and reduce the ability of the kidney to excrete water. Since forced hydration is routinely used concomitantly with cyclophosphamide to prevent haemorrhagic cystitis, patients may retain water, developing severe hyponatremia rapidly.

High doses ($>1,000 \text{ mg/m}^2$) of cyclophosphamide are being used in neoplastic diseases, when hyponatremia might be a major complication.

Conversely, lower IV doses are being used with increasing frequency in the treatment of lymphoma, solid tumor, and systemic lupus, with only a few case reports of cyclophosphamide-induced hyponatremia reported.

Case presentation

The patient, a 43 year old, premenopausal female with a history of hypertension, was diagnosed with early left breast cancer (T2 N0 M0 [II A according to American Joint Committee on Cancer staging]) in February 2014. She underwent left breast wire-guided wide local excision, with sentinel lymph node sampling, and axillary dissection. Histopathologic examination revealed invasive ductal carcinoma, grade 2, hormone receptors were positive and Her 2/neu negative.

The patient was referred to HCG Hospital. The plan of therapy was to receive four cycles of adjuvant chemotherapy (AC protocol) doxorubicin (60 mg/m^2) and cyclophosphamide (600 mg/m^2), followed by radiation therapy to the left breast, with hormonal therapy for 5 years.

Echocardiography was normal with left ventricular ejection fraction of 55%–60%.

On February 26, 2014, as the patient’s operative wound had healed with good general performance and all laboratory values were normal ([Table 1](#)), she was started on chemotherapy (AC protocol) Cycle 1 with antiemetic protocol (aprepitant + dexamethasone + metoclopramide [if needed for nausea and vomiting]) as an outpatient in the day care unit, without immediate complications.

Her home medications included only atenolol (50 mg)/chlorthalidone (12.5 mg) combined orally, once daily, for hypertension.

Cycle	Cycle 1 dated 07/03/2013		Cycle 2 dated 28/03/2013		Cycle 3 dated 29/04/2013	
	Before	After	Before	After	Before	After
Date of lab value	06/03/13	09/03/13	24/03/13	29/03/13	29/04/13	30/04/13
Serum Na mmol/L	115	112	112	105	112	112
Blood glucose mmol/L	4.7	6.0	4.5	7.1	5.9	7.4
Serum creatinine umol/L	54	50	60	36	50	47
Urea nitrogen mmol/L	4.3	5.1	4.3	4.0	2.3	3.1

[Table 1](#)
Laboratory values on admission, before and after chemotherapy

The patient developed severe nausea and vomiting on day 3 of chemotherapy. She presented to the emergency care department on day 3 with complains of generalized weakness, mental confusion, and generalized seizures. She collapsed in the accident and emergency area, was intubated, and then shifted to the medical intensive care unit. Laboratory tests showed serum Na of 112 mmol/L; renal and liver functions ([Table 1](#)), arterial blood gases, Procalcitonin, and computed tomography of the brain were all normal.

The patient was supplemented with electrolyte replacement and her serum Na level improved on March 11, 2014 to 129 mmol/L.

Her antihypertensive medication was held until resolution of hyponatremia was achieved. Blood and urine cultures were negative. She was extubated but then developed fever due to aspiration pneumonia. After treatment with IV antibiotics (piperacillin/tazobactam), the patient was transferred to ward where her condition improved with correction of her serum Na level and antibiotics.

Magnetic resonance imaging of the brain showed no metastasis. The patient was discharged when her serum Na reached 138 mmol/L.

It was decided that the rest of chemotherapy was to be given under direct supervision as an inpatient. She was admitted for the second cycle.

On day 1 of Cycle 2; the patient’s serum Na level was 142 mmol/L (prechemotherapy).

On day 2, serum Na dropped to 127 mmol/L, and the patient was started on oral sodium chloride and IV sodium bicarbonate.

Serum Na levels improved to reach 140 mmol/L on March 30, 2013 (day 3), and she was discharged home on March 31, 2013 ([Figure 1](#)).



[Figure 1](#)
Cumulative summary report of serum Na level.

The patient was assessed in the outpatient clinic later, where her serum Na was 136 mmol/L, but she was suffering from severe fatigue, as well as nausea and vomiting.

In an effort to decrease her distress, it was decided to consider a 25% dose reduction for Cycles 3 and 4 of chemotherapy (both chemotherapeutic agents).

She was started on paroxetine (20 mg orally once daily) to relieve her anxiety.

Again she was admitted for the third cycle of chemotherapy. On day 1 her serum Na was 139 mmol/L which dropped to 126 mmol/L on day 2 without major symptoms.

As part of the management we tried to eliminate all factors that might contribute to hyponatremia, therefore chlorthalidone was withheld and the patient was prescribed atenolol in a higher dose (100 mg orally, once daily).

The patient improved on IV and oral sodium bicarbonate, and she was discharged on (day 3) with a serum Na level of 139 mmol/L.

In Cycle 4, chlorthalidone was still on hold and the patient was kept on atenolol. Symptom-wise, she was much better after the dose reduction. The fourth cycle was given successfully, for which she was admitted for 3 days without severe drops in her serum Na level. She was started on a secondary prophylaxis of IV and oral sodium bicarbonate, and was kept on atenolol. Serum Na was 140 mmol/L before chemotherapy, 131 mmol/L on day 2, and then 142 mmol/L on the day of discharge.

The patient was treated further with radiation therapy to the left breast in the period from June 11 to July 25, 2013 and started hormonal therapy with tamoxifen (20 mg per day orally) in June 2013.

Discussion

This report describes a breast cancer patient who developed severe hyponatremia after administration of the first and subsequent cycles of AC protocol. Cyclophosphamide is commonly used in the management of malignant diseases; severe cyclophosphamide-induced symptomatic hyponatremia is very uncommon, and there have been a limited number of case reports on cyclophosphamide-induced hyponatremia.

The mechanisms of cyclophosphamide-induced hyponatremia have not been clearly understood, but cyclophosphamide could indirectly cause antidiuretic hormone release and reduce the ability of the kidney to excrete water.

The patient in our case was prescribed atenolol (50 mg)/chlorthalidone (12.5 mg) for hypertension. Chlorthalidone is a thiazide diuretic. Thiazide diuretics are considered an essential first-line treatment of hypertension

Hyponatremia is an occasional but potentially fatal complication of thiazide diuretics. Thiazide diuretics inhibit electrolyte transport in the diluting segment and may impair urinary dilution in some vulnerable groups. Thiazides act by inhibiting reabsorption of Na^+ and Cl^- from the distal convoluted tubule by blocking the thiazide-sensitive Na^+/Cl^- transporter. Risk factors predisposing to thiazide-induced hyponatremia include older age, female sex, reduced body mass, and concurrent use of other medications that impair water excretion.

We noticed that when comparing Cycle 3 and Cycle 4; the symptoms of hyponatremia were better managed in Cycle 4 after withholding chlorthalidone.

The serum Na level was corrected and patient discharged on day 5 of Cycle 3 and day 3 of Cycle 4 ([Table 2](#)).

This is a novel finding in the sense that, to our knowledge, hyponatremia induced by concomitant use of thiazides and cyclophosphamide has not been reported previously.

Item	Cycle 1	Cycle 2	Cycle 3	Cycle 4
Dose modification	No	No	Yes	Yes
Chlorothalidone Rx	Yes	Yes	Yes	No
Serum Na level post-chemo (mmol/L)	112	127	126	131
Discharge day (day of cycle)	D11	D3	D3	D3
LOS	9	3	3	3

Abbreviations: Rx, prescription; chemo, chemotherapy; LOS, length of stay; D, day.

[Table 2](#)
Therapy management and relevant outcomes

Using the Naranjo Causality Scale for adverse drug reactions, we obtained a score of 10 (>9= definite adverse drug reaction; [Table 3](#)). Based on this and on the clinical and investigation findings, we considered a significant possibility of severe hyponatremia induced after the first and subsequent cycles of the AC protocol.

Question	Scoring	
	Yes	No
1. Are there previous conclusive reports on this reaction?	+1	0
2. Did the adverse event appear after the suspected drug was given?	+2	+
3. Did the adverse reaction improve when the drug was discontinued or a specific antagonist was given?	+1	0
4. Did the adverse reaction appear when the drug was readministered?	+2	-1
5. Are there alternative causes that could have caused the reaction?	-1	+
6. Did the reaction reappear when a placebo was given?	-1	+
7. Was the drug detected in any body fluid in toxic concentrations?	+1	0

[Table 3](#)
Naranjo Causality Scale for adverse drug reactions

Further studies will be necessary to evaluate the likelihood of hyponatremia after low-dose IV cyclophosphamide therapy; the molecular mechanisms of hyponatremia induced by cyclophosphamide; risk factors for cyclophosphamide-induced hyponatremia; and establish dose dependent relationships of cyclophosphamide with the severity of hyponatremia and management of other concomitant agents expected to induce hyponatremia.

Conclusion

Because of the variety and the rarity of hyponatremia induced by low doses of cyclophosphamide, we emphasize the importance that physicians consider the probability of severe hyponatremia induced by low doses of cyclophosphamide, and evaluate all aspects of a patient's current medications during usage of cyclophosphamide. Furthermore, health care providers should be aware of this potential toxicity, appropriate monitoring should be implemented, and patients should be counselled to notify their physician if they develop any new or unusual symptoms.

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Review of Length of ICU Stay in Cancer Patient's Undergoing Major Abdominal Surgeries – A Retrospective Study.

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INTRODUCTION:-

Research on Intensive Care Unit (ICU) outcomes provides valuable inputs in developing more improved models for patient-centered outcomes, more robust predictions of resource use, better individual outcome prediction, and alternative outcome predictions. Prolonged ICU stay can adversely affect the health status by increasing the risk of infection, complications, and possibly mortality. Long stays in the intensive care unit are associated with high costs and burdens on patients and patient's families and in turn affect society at large. Although factors that affect length of stay and outcomes of care in the intensive care unit have been studied extensively, there is no relevant studies or review on patients with ICU stay after major abdominal cancer surgeries. Among the studies examining strategies to improve quality and reduce costs by changing the way, care is provided to post-surgical patients, attention has recently focused on assessing patients with a prolonged length of stay (LOS) in the ICU. There are many measures to assess ICU resource utilization. A simple and readily available measure is ICULOS (ICU length of stay).

Background:

Post Cancer surgical cases leading to prolonged length of stay (LOS) in an intensive care unit (ICU) is associated with significant morbidity, mortality and resource utilization. This study assessed the independent effect of ICULOS in-hospital.

REVIEW OF LITERATURE

ICU's length of stay vary greatly in geographic location, resources, organizational structure, and leadership. Each of these factors may have an effect on patients care and length of stay. Fisher et al examined the variation in Medicare spending between different geographic areas. Cost of ICU care in United States is 1% to 2% of the gross national product, 15% to 20% of US hospital costs and 38% of total US health care costs. Stricker et al study revealed only 11% of patients stayed in ICU for more than 7 days, but used up more than 50% of ICU resources. Esserman et al study shows 32% of ICU resources were spent caring for patients who survived less than 100 days after discharge (Almost 1/3rd of ICU resources).

OBJECTIVES

To identify and categorize the factors such as perioperative regimen and postoperative complications, in major abdominal cancer surgeries associated with prolonged stays in ICU and to propose actions needed to implement the modernization of care.

STUDY POPULATION AND DESIGN

HCG Hospitals, Bangalore is a 500 bed cancer care hospital, with 15 bed surgical ICU staffed with full time Anaesthesiologists and experienced nursing staff. The study includes a retrospective review of patients who have under gone major abdominal cancer surgeries admitted to surgical ICU from January 2012 to October 2012. Data analyzed includes the patient length of stay in ICU, and the reason for extended length of stay.

Surgical patients Inclusions:

- Total / partial gastrectomy.
- TAH with PLND.
- Cytoreductive surgery.
- Hepatectomy.
- Radical prostatectomy / cystectomy.
- Whipple's procedure.
- HIPEC.
- ASA physical status I, II and III.

VARIABLES: The variables that were included are

1. Number of patients undergoing major abdominal cancer surgery (MACS) admitted to ICU for the period January 2012 to October 2012.
2. Number of days of ICU stay in patients with MACS for the period January 2012 to October 2012.
3. Total number of discharges from ICU for that period.
4. ICULOS.
5. Number of patients who have over stayed after ICULOS.
6. Reasons for overstay.
7. Number of mortality for that period.

Postoperative Morbid Events:

The Pilot Study Definition of Postoperative Morbid Events are broadly classified as per the organ systems:

1. Cardiac Events
 - a. Myocardial ischemia without myocardial infarction
 - b. Myocardial infarction
 - c. Dysrhythmias and conduction abnormalities
 - d. Congestive heart failure
 - e. Postoperative vasopressors
2. Respiratory Events
 - a. Prolonged Intubation
 - b. Reintubation Post operation
 - c. Acute respiratory distress syndrome (ARDS)
 - d. Hypoxemia
 - e. Pneumonia
 - f. Acute Respiratory Failure

3. Vascular Events
 - a. Venous Thrombus
 - b. Pulmonary Emboli
4. Renal Events
 - a. Renal insufficiency
 - b. Acute renal failure
 - c. Electrolyte imbalance
5. Infectious Events
 - a. Wound infection
 - b. Sepsis
6. Gastrointestinal Events
7. Re-operative Events
8. Readmission Event
9. Death

AVERAGE LENGTH OF STAY:

Research on factors related to Average length of stay in cancer patients provides basis for developing preventive strategies to reduce hospital stay and cancer mortality. The purpose of this retrospective study is to focus on the factors responsible for hospital length of stay and producing burden on the hospital, block and exhaust the resources which otherwise could effectively be utilized for the treatment of new patients needed for hospitalization.

The Statistical calculation used for health planning purposes.

1. METHOD 1 → Total discharge days / Total discharge = Avg. LOS in days

2. METHOD 2 → Total in-patient days / Total admissions = Avg. LOS in days

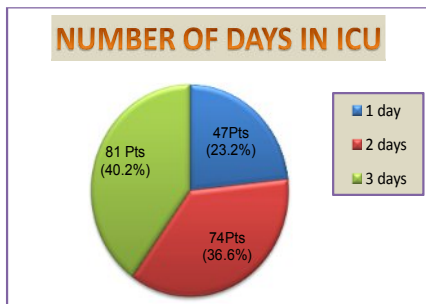
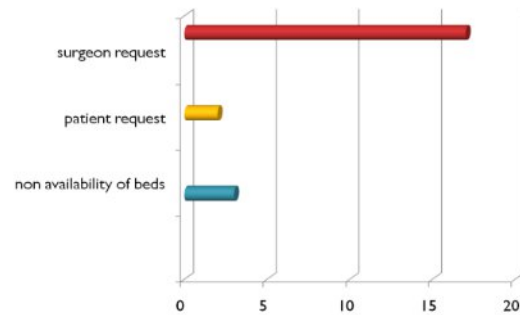
❖ TOTAL DISCHARGE DAYS - The sum of the number of days spent in the hospital for each in patients.

❖ TOTAL DISCHARGES - The number of inpatients released from the hospital during the time period examined. This figure includes deaths.

OBSERVATIONS AND RESULTS:-

- Total no. of patients – 202
- Total no. of ICU days – 596
- Total no. of discharges – 199
- Average ICULOS – 2.99 days
- 1 day stay – 47 pts.
- 2 days stay – 74 pts.
- 3 and more days stay – 81 pts.
- Longest stay – 13 days.
- Mortality – 5 pts.
- ICU days – 32 days.

- Request from surgeons – 15 pts (7.4%)
- Request from patients – 02 pts (1%)
- Non availability of beds – 03 pts (1.5%)



- Institutional factors
- Institutional factors:
- Availability of all resources under one roof.

Some of the factors that could influence the LOSICU:

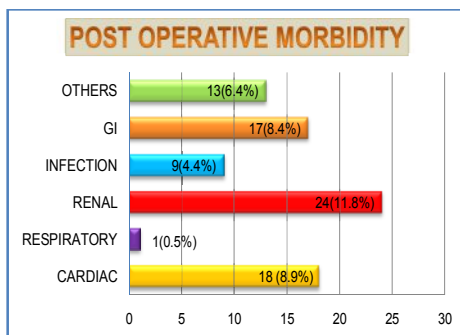
- Institutional factors- depends on the availability of all resources under one roof
- And the Management skill of specialists in the hospital.

POST OPERATIVE MORBID EVENTS

1. Cardiac events - 18 pts (8.9%)
2. Respiratory events – 1 pt (0.5%)
3. Vascular events – 0 pts
4. Renal and Electrolyte events – 24 pts (11.8%)
5. Infectious events – 9 pts (4.4%)
6. GI events – 17 pts (8.4%)
7. Other events – 13 pts (6.4%)
8. Re operative events – 02 pts (1%)
9. Re admission events – 03 pts (1.5%)
10. Death – 05 pts (2.5%)

PITFALL OF THE STUDY

- Age
- ASA physical status
- Nutritional status
- Pre-operative chemo and radiotherapy
- Peri operative scoring system
- Intraoperative events
- No relevant studies to compare



Discussion:

In the context that the number of patients after cancer surgery who require intensive care is increasing rapidly in most of the countries, there is growing concern about the length of ICU stay. The present study presents a framework for estimating the length of ICU stay for cancer patients after major surgery. To the best of our knowledge, the various factors that can influence for prolonged ICU care and LOSICU in our set of patients includes:(a)Institutional factors-such as availability of all resources under one

roof and Management of the patients by specialists in ICU and the request of surgeons. (b)Medical factors- such as Severity of illness and comorbid illness of the patients have a direct co-relation of prolonged ICU stay.(c)Social factors – that arise from the Conflicts between health care team.(4)Psychological factors- Patients with severe stress and depressive illness have shown to have a prolong stay and delayed recovery in the ICU.

The length of ICU stay contributes a large proportion of financial burden during the whole stay in the hospital. The gap does exist between the patient's families' optimistic expectation and the ICU clinician's professional judgment and choice of treatment. This retrospective study provides the information about the distribution of the length of ICU stay and its related determinants. So in our study few of the predictors that could modify our ICULOS that could be taken in to considerations were(1)To improve pre-operative assessment and preparation by including the Anesthesiologists at much earlier stage of planning.(2)To improve intraoperative care by Goal directed intraoperative fluid therapy, Appropriate balanced electrolyte solution, Judicious use of vasopressors and inotropes, Optimized administration of blood and blood product(3) Last, but not least→Hospital and health care interventions such as Hospital guidelines to be used efficiently in intensive care resources.

CONCLUSION

Knowing the length of ICU stay and reasons for long ICU stay have potential application in optimizing ICU resource planning and decreasing the health care costs. Intra operative hemodynamic optimization by goal directed fluid therapy and identifying post-operative events will help in shorter ICULOS.A true multidisciplinary approach

involving Surgeons, Anesthesiologists and Intensivists through all the phases of planning results in better functional outcome, minimum post-operative morbidity and mortality and a shorter ICULOS leading to a good quality of life.

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