Rajiv Gandhi Cancer Institute and Research Centre

NewsLetter

Issue: September 2022 | Vol. XXVI | No. 9 | Price: 50 Paisa

EDITORIAL

"FIRST DO NO HARM"

HIPPOCRATIC OATH - I will prescribe regimens for the good of my patients according to my ability and my judgment and **"never do harm"** to anyone.

The origin of the concept of **patient safety** is not recent; it is an age old ethical practice in medical field. Hospitals were founded to give care to those who need it and to keep patients safe is their moral duty.The occurrence of adverse events due to unsafe care is one of the 10 leading causes of death and disability in the world.In high-income countries, it is estimated that one in every 10 patients is harmed by unintentional medical errors while receiving hospital care. The harm can be caused by a range of adverse events, with nearly 50% of them being preventable.Each year, 134 million adverse events occur in hospitals in low- and middle-income countries, due to unsafe care, resulting in 2.6 million deaths.Globally, as many as 4 in 10 patients are harmed in primary and outpatient health care. Up to 80% of harm is preventable. The most detrimental errors are related to diagnosis, prescription and the use of medicines.

Patient safety is the prevention of harm to the patient with emphasis on system of care, prevention of errors, learning from the errors that occur and building a culture of safety. World Health Organization (WHO) through various studies and analysis has compiled the following as patient safety situations of utmost concern:

- **Medication errors** are a leading cause of injury and avoidable harm in health care systems.
- **Health care-associated infections** occur in 7 and 10 out of every 100 hospitalized patients in high-income countries and low- and middle-income countries respectively.
- **Unsafe surgical care procedures** cause complications in up to 25% of patients. Almost 7 million surgical patients suffer significant complications annually, 1 million of whom die during or immediately following surgery.
- **Unsafe injection practices** in health care settings can transmit infections, including HIV and hepatitis B and C, and pose direct danger to patients and health care workers.
- **Diagnostic errors** occur in about 5% of adults in outpatient care settings, more than half of which have the potential to cause severe harm. Most people will suffer a diagnostic error in their lifetime.
- **Unsafe transfusion practices** expose patients to the risk of adverse transfusion reactions and the transmission of infections. Data on adverse transfusion reactions from a group of 21 countries show an average incidence of 8.7 serious reactions per 100 000 distributed blood components.
- **Radiation errors** involve overexposure to radiation and cases of wrong-patient and wrong-site identification. A review of 30 years of published data on safety in radiotherapy estimates that the overall incidence of errors is around 15 per 10 000 treatment courses.
- **Sepsis** is frequently not diagnosed early enough to save a patient's life. Because these infections are often resistant to antibiotics, they can rapidly lead to deteriorating clinical conditions, affecting an estimated 31 million people worldwide and causing over 5 million deaths per year.
- **Venous thromboembolism (blood clots)** is one of the most common and preventable causes of patient harm, contributing to one third of the complications attributed to hospitalization. Annually, there are an estimated 3.9 million cases in high-income countries and 6 million cases in low- and middle-income countries.

To err is human, and expecting flawless performance from human beings working in complex, high-stress environments is unrealistic. Then what can be done? The answer is continuous improvement based on learning from errors and adverse events along with clear policies, leadership capacity, data to drive safety improvements, skilled health care professionals and effective involvement of patients in their care. There should be continuous monitoring and review of processes in the form of regular introspection and audits, competency mapping for work assignment, effective and safe communication, clinical care pathways, evidence based medicine, monitoring of KPIs/quality indicators and reporting of incidents irrespective of near miss, adverse or sentinel events.

One of the best solutions to improve patient safety in hospitals is compliance to International patient Safety goals defined by Joint Commission international (JCI).

INTERNATIONAL PATIENT SAFETY GOALS (IPSG)

IPSG.1	**Identify Patients Correctly** • With 2 identifiers – CRN & full name before providing any treatment or procedure
IPSG.2	**Improve Effective Communication** • Read back & spell back while taking verbal orders, record and get countersigned. • Define critical values, report and document • Handover communication by nurses and doctors during shift handovers and transfers
IPSG.3	**Improve the Safety of High-Alert Medications** • Identification, labelling, storage & administration of high alert medications, Look alike sound alike drugs & concentrated electrolytes
IPSG.4	**Ensure safe surgery** • Site marking to be done by the person performing the procedure • Time out by full surgical team • Adherence to WHO surgical Safety checklist
IPSG.5	**Reduce the Risk of Health Care-Associated Infections** • Compliance to hand hygiene guidelines • Evidence based practices to prevent HAIs • Follow care bundles for VAE, Central line & Catheter care • Compliance to Antibiotic policy
IPSG.6	**Reduce the Risk of Patient Harm Resulting from Falls** • Fall risk assessment for all inpatients & outpatients) • Re-assessment of patients identified at risk of fall • Implementation & monitoring of fall risk reduction measures

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EDITORIAL

The bottom line is, in order to ensure safe practices the laid down SOPs & policies should be followed at all patient care settings. The error happens only when there is a breach or non-adherence to the standard protocol. Therefore, all health care professionals should play their part to ensure patient safety as "**SAFETY IS EVERYONE'S RESPONSIBILITY**".

Another initiative to promote safety is **Patients for Patients Safety** (PFPS), a programme of WHO Flagship Initiative "A Decade of Patient Safety 2021-2030" that engages and empowers patients and families and facilitates their partnership with health professionals and policy-makers to make health care services safer worldwide. The goal is to engage and empower patients, families and communities to play an active role in their own care, bring the voices of patients and people to the forefront of health care,and create an enabling environment for partnerships between patients, families, communities and health professionals.

Do it safe way, do it right way and do it every day.

Do things right, with right people, at right time, first time and every time with empathy.

Guest Editor
Ms. Renu Katnauriya
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WHEN SPINE STANDS BETWEEN YOU AND YOUR FINAL WISH…..

METASTATIC SPINE DISEASE: IS IT THE END OF ROAD OR MERELY A SPEED BUMP?

Imagine a life where the fright of getting paralyzed impedes you from playing with your grandchild. A 70-year-old man stepped onto the premises of RGCIRC with neck pain owing to metastasis from lung cancer. Imaging revealed a C4 vertebral pathological compression fracture with complete collapse and a posterior bulge indenting the cord with signal changes inside it.

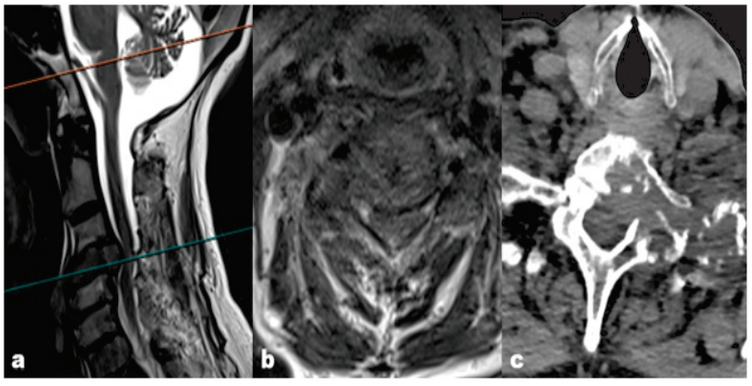

Figure 1:(a) and (b) Sagittal and axial views showing the C4 vertebral body collapse and cord indentation. (c) Axial CT showing the osteolytic lesion involving the C4 vertebral body.

Such instability of the cervical spine could have led to quadriplegia following trivial trauma. With the other modalities of palliative therapies not being able to address the issue, the onus was on the neuro-oncosurgery team to come up with an acceptable solution. So the goal of the surgical intervention was to approach the target site through a very narrow anatomic corridor in between the vital structures like carotid artery, jugular vein, trachea, and esophagus, excise the diseased vertebral component, decompress the cord and stabilize the spinal segment. Accordingly, C4 corpectomy, followed by mesh cage and anterior plating was done. A conscious attempt was made to hide the skin incision in one of the skin creases.

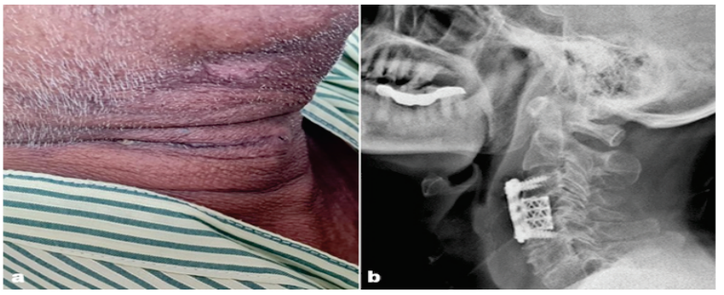

Figure 2: a. healed scar of surgery. b. lateral X-ray showing position of mesh cage and anterior plating

The intraoperative and postoperative periods were uneventful. Being pain-free he could ambulate on the first postoperative day. A week later he turned up in the neurosurgery OPD with his grandson, walking fearlessly and more importantly ready to restart the systemic therapy for the primary disease.

A heartfelt message penned down by the patient's son is a testimony to this true story.

".....my father had a C4 collapse and we were worried that it might paralyze him one day. The neurosurgery team was quick to plan an optimal surgical approach and meticulously addressed all our worries. The surgery went fine and our family is happy that he is back to what he was 1 month back, especially playing with his grandson…."

Having a metastatic disease is like a death sentence, but it's the right of every patient to live whatever life he has, to the best of his functional abilities and with utmost dignity. The Brain and spine oncosurgery team at RGCIRC is dedicated to providing such patients with a ray of hope in the twilight phase of their lives.

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HYPERBARIC OXYGEN THERAPY (HBOT)
AN UPCOMING MEDICAL TECHNOLOGY FOR INNOVATIVE HEALING

Introduction

Hyperbaric oxygen therapy (HBOT) is a medical treatment that facilitates the body's natural healing process by inhalation of 100% oxygen in a total body chamber, where atmospheric pressure is increased by a factor of 2-3 times. Under normal circumstances, oxygen is transported throughout the body only by RBCs in the blood. With HBOT, oxygen is dissolved into all the body's fluids, the plasma, the central nervous system fluids and the lymph, and can be carried to areas where circulation is diminished or blocked. The increased oxygen greatly enhances the ability of WBCs to kill bacteria, reduces oedema and facilitates angiogenesis.With repeated scheduled treatments, the temporary extra high oxygen levels encourage normal tissue oxygen levels; even after the therapy is completed. It is important to understand that oxygen is not absorbed trans-dermally;the only transport mechanism is through the pulmonary system.

Mechanism of action

HBOT has two primary mechanisms of action –*Hyperoxygenation* and a *decrease in bubble size*. Hyperoxygenation results from an increase in dissolved oxygen in plasma as a result of increased partial pressure of arterial oxygen (pAO2). Decrease in bubble size is an application of Boyle's law according to which the volume of a bubble decreases directly in proportion to increasing pressure. This is how HBOT helps in the management of decompression sickness and arterial gas embolism.

Secondary mechanisms of action of HBOT include Vasoconstriction, Angiogenesis,Fibroblast proliferation, Leukocyte oxidative killing, Toxin inhibition and antibiotic synergy. Hyperoxia in normal tissues causes vasoconstriction which reduces post-traumatic tissue oedema (contributing to treatment of crush injuries, compartment syndromes and burns).This vasoconstriction, however, does not cause hypoxia as this is more than compensated by increased plasma oxygen content and microvascular flow. This is important when considering concussion and brain injuries as we can potentially reduce swelling and further damage while promoting neuroplasticity to restore normal brain activity and reduce potential for long-term neurological sequelae.

Hypoxia is a vital stimulant for angiogenesis, but development of adequate capillary network requires adequate amounts of tissue oxygen concentration. HBOT increases the oxygen gradient between the center and periphery of the wound, thus creating a strong angiogenic stimulus. This along with fibroblastic proliferation leads to increased neovascularisation and promotes wound healing.

HBOT Monoplace Chamber installed in RGCIRC, 7th Floor C - Block (Room No 2751)

Types of HBOT

There are two different types of HBOT chambers as per NFPA – Class A (multiple occupancy/ Multiplace) and Class B (single occupancy/ Monoplace). Both are equally effective but Multiplace chambers are considered safer with the added advantage of treating several patients at one time. Depending on the underlying condition, the estimated duration of session varies from 1.5 to 2 hours and may be performed from one to three times daily, being given among 20 to 60 therapeutical doses.

Indications for HBOT

Hyperbaric oxygen therapy (HBOT) is well known for treating decompression sickness in scuba and deep-sea divers. In the last decade, HBOT has been used to treat several medical conditions, of which the FDA approved indications are listed here.

1. Decompression Sickness or Gas Embolism
2. Crush Injury, Compartment Syndrome & Acute Traumatic Ischemia
3. Clostridial Myositis &Myonecrosis (Gas gangrene)
4. Exceptional anaemia when blood transfusion cannot be used
5. Non-healing wounds (e.g. Diabetic wounds that have not resolved after 30 days of conventional wound care and antibiotics)
6. Necrotizing soft tissue infections
7. Refractory Osteomyelitis
8. Intracranial Abscess / Traumatic brain injury
9. Osteoradionecrosis
10. Compromised skin flaps or grafts
11. Thermal burns
12. Radiation Necrosis
13. Carbon Monoxide poisoning
14. Idiopathic sudden sensorineural hearing loss
15. Vision loss due to Central retinal artery occlusion

Osteoradionecrosis (ORN) of the mandible is a severe iatrogenic disease of devitalized bone caused by radiation therapy of oral and oropharyngeal cancers. The bone lies exposed with a non-healing ulcer despite conventional wound management for three to six months

Contra-Indications for HBOT and Possible Side effects

Absolute contraindications include untreated pneumothorax, recent treatment with drugs like *Bleomycin* (pulmonary toxicity, at least 3-4 months gap recommended), *Cisplatin* (delayed wound healing, gap of 3 months is recommended), *Doxorubicin* (cardiotoxicity, at least 3-4 days gap recommended), *Disulfiram*(blocks superoxide dismutase, to be discontinued) and *Sulfamylon* (impaired wound healing, to be discontinued). All patients are screened with a Chest X Ray prior to starting HBOT. Relative contraindications are COPD/ asthma, Low ejection fraction on 2D Echo (<35%), seizures, claustrophobia, pregnancy, hereditary spherocytosis, Eustachian tube dysfunction, high fever, pacemaker, epidural pain pump and recent upper respiratory tract infection.

Possible side effects of HBOT are temporary near-sightedness (myopia) which usually resolves in 3-6 months, middle ear injury and rupture of ear drum, barotrauma to lungs, seizures due to oxygen toxicity in the CNS, fire outbreak due to oxygen rich environment of the HBOT chamber. Minor side effects most commonly experienced by patients are popping in ears and ear pain due to pressure changes similar to that experienced in a flight. This can easily be alleviated by teaching the patients how to perform Valsalva manoeuvre. All fire safety measures are followed including prohibition of inflammable substances and use of only 100% cotton clothing within the chamber.

Conclusion

There is a lot of literature on the beneficial effects of HBOT in approved indications and active research is currently underway for several newer off-label and experimental indications. Overall it appears to be highly beneficial in improving tissue oxygenation and enhance wound healing.

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Date of Printing: 25th September 2022

Date of Publishing: 30th September 2022

Posted at: Ashok Vihar, Head Post Office, Delhi - 110052
Register with Registrar of Newspaper Under No.68797/1998
Postal Department Registration No. DL(N)/004/2021-23
Licensed to Post without Prepayment Under No.: "U"(DN)-162/2022-23

ONCOLOGY BOOK LAUNCH

On 10th September 2022, at India Habitat Centre, RGCIRC launched the Oncology book, **DeVita, Hellman and Rosenberg's Cancer- Principles and Practice of Oncology**, **Review**, published by Wolters and Kluwer and edited by Dr. Swarupa Mitra, Senior Consultant, Radiation Oncologist, RGCIRC.

The book was launched by **Dr. Harsh Vardhan**, Member of Parliament and Former Health Minister, Govt of India.

DeVita, Hellman and Rosenberg's Cancer- Principles and Practice of Oncology, published by Wolters and Kluweris the primary text book of Oncology which has been read by all Oncologists during their training and also through out their practice. To make the chapters simple and accessible to residents and clinicians, Wolters and Kluwer published Companion book of this prestigious Text Book. 5 International Review Editions have already been published in the recent Past.

Since the cancer epidemiology varies in the south Asian countries, the Publishers proposed bringing out the first South Asian Review of the 11th edition of the Text book, with South Asian Inputs and updates. The book has been designed in line with the already published 5 international editions in the form of Questions and Answers, covering important areas of medical, surgical and radiation oncology, along with diagnosis, staging, molecular biology and immunotherapy, targeted therapy and more. The answers come with elaborate explanations, for the physician to grasp its essence. Each chapter corresponds to one or more chapters of the main text book. New Chapters which are very relevant in modern Oncology practice have been added on - Treatment related toxicities, MUO, Treatment of Metastatic Cancers, Second Cancers and Cancer survivorship.

The authors contributing, came from all parts of India and overseas to maintain the essence of the book.

The Forewords have been very kindly written by **Dr. Prof. J. P. Agarwal**, Head of the Department of Radiation Oncology, TMH Mumbai and **Dr. Sudhir Rawal**, Medical Director and Director Urogenital Onco surgery, RGCIRC, New Delhi.

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Printed and Published by Mr. Pramod Maheshwari on behalf of Indraprastha Cancer Society and Research Centre and printed at R. R. Enterprises, 18 - A, Old Gobind Pura Ext., Street No. 2, Parwana Road, Delhi - 110051, Tel: +91- 8447494107, Published from Rajiv Gandhi Cancer Institute and Research Centre, D - 18, Sector - 5, Rohini, Delhi - 110085

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