HEART NEWS

...NHI Dialogue

Vol. 64 No. 4 Since 1963

Health Magazine of All India Heart Foundation & National Heart Institute
अखिल भारतीय हृदय प्रतिष्ठान एवं राष्ट्रीय हृदय संस्थान की स्वास्थ्य पत्रिका

October – December 2025

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हृदय स्वास्थ्य पत्रिका

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Health Magazine of :

All India Heart Foundation
&
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For Private Circulation Only

An Approach to Hypoglycemia

Hypoglycemia is a potentially life-threatening condition characterized by abnormally low blood glucose levels, demanding timely recognition and management. An effective clinical approach to hypoglycemia requires understanding its diverse etiologies, pathophysiology, and the variability in presentation across different patient populations. Whether stemming from insulin therapy in diabetic patients, critical illness, or endocrine dysfunctions, the ability to swiftly identify and treat hypoglycemia is paramount. This review explores current diagnostic strategies, therapeutic interventions, and preventive measures, aiming to enhance clinical outcomes and reduce associated complications. A structured, patient-centered approach ensures not only resolution of acute episodes but also long-term glycemic stability and safety.

Part I: Hypoglycemia in Individuals with Diabetes

Overview

Hypoglycemia is a well-recognized potentially life-threatening complication of diabetes mellitus among individuals on treatment. Hypoglycemia in patients with diabetes mellitus is believed to occur due to relative or absolute insulin excess in the setting of blunted physiological responses. The common factors associated with it include treatment with insulin or insulin-secretagogues like sulfonylureas and meglitinides, long duration of diabetes, irregular follow-up, skipping of meals, intensive exercise, sepsis, renal failure, autonomic neuropathy, and alcohol consumption. Various studies report that up to 65% of individuals with Type 1 or Type 2 diabetes report at least one hypoglycemia episode annually. Majority of episodes of hypoglycemia are asymptomatic or associated with mild symptoms only but it can even be life-threatening or have long-term effects due to neuroglycopenia. Hypoglycemia events can also be a source of psychological burden for the patient as well as family and friends. History of multiple hypoglycemia events has also been associated with increased risk of cardiovascular events and mortality.

Classification of Hypoglycemia

Hypoglycemia in persons with diabetes is classified based on glucose levels and clinical severity:

- **Level 1**: Glucose 54–70 mg/dL, autonomic symptoms present, neuroglycopenic symptoms absent.
- **Level 2**: Glucose <54 mg/dL, with or without autonomic symptoms, neuroglycopenic symptoms present.
- **Level 3**: Any glucose level, with severe cognitive or physical impairment requiring third-party assistance.

Risk Factors

Several factors increase the risk of hypoglycemia in persons with diabetes on treatment with insulin or insulin secretagogues:

A) Clinical/biological risk factors

- Recent (past 3-6 m) level 2 or 3 hypoglycemia
- Intensive insulin therapy
- Impaired hypoglycemia awareness
- End stage renal disease
- Cognitive impairment or dementia
- Multiple recent level 1 hypoglycemia episodes
- Basal insulin therapy
- Age >75y, Female sex
- High glycemic variability
- Polypharmacy
- CVD, CKD (eGFR <60ml/min), MDD
- Neuropathy, retinopathy Multiple recent level 1 hypoglycemia episodes
- Basal insulin therapy
- Age >75y, Female sex
- High glycemic variability
- Polypharmacy
- CVD, CKD (eGFR <60ml/min), MDD
- Neuropathy, retinopathy

B) Social, cultural, economic risk factors

- Food insecurity
- Low income status
- Homelessness
- Fasting for religious or cultural reasons
- Low health literacy
- Alcohol or substance abuse

Impaired Awareness of Hypoglycemia (IAH)

Impaired Awareness of Hypoglycemia, or IAH, is a dangerous condition where patients fail to recognize early warning signs of low blood glucose. As blood glucose levels fall below 70 mg/dL, secretion of counterregulatory hormones including glucagon and epinephrine is triggered. Hypoglycemia initially causes autonomic symptoms like palpitations, tremors, hunger, and sweating. At lower blood glucose levels, it causes neuroglycopenia and can cause seizures, loss of consciousness, and even prolonged coma or death. Symptoms of hypoglycemia are idiosyncratic but most individuals can recognize them and take corrective action. However, in case of IAH, autonomic symptoms develop at or below the threshold for neuroglycopenic symptoms. Risk factors include:

- Repeated hypoglycemia episodes
- Long-standing diabetes

- Genetic predisposition
- Diabetic autonomic neuropathy

Evaluation tools such as Gold and Clarke scores are used to assess awareness, especially in T1DM. They have also been validated for use in T2DM. Recently, use of Continuous Glucose Monitoring (CGM) has been used in various studies and can be adopted for improving hypoglycemia detection especially in individuals at risk for IAH.

Fear of Hypoglycemia

Fear of hypoglycemia is a prevalent psychological condition encountered in persons with diabetes mellitus on treatment. It affects as many as 30% of persons with diabetes on insulin or secretagogues. It is seen more commonly in young patients with type 1 diabetes mellitus on insulin therapy with history of sudden hypoglycemia events. Females are more frequently affected than males. Fear of hypoglycemia leads to maladaptive behaviors like:

- Underdosing of insulin: hampering glycemic control and increasing risk of diabetes-related complications
- Avoiding physical activity and excessive calorie intake: leading to overweight/ obesity

Therefore, it is an important entity for clinicians to recognize during follow up visits with persons with diabetes. Validated tools such as the Hypoglycemia Fear Survey (HFS-II), Quick Screening for Fear of Hypoglycemia (QSFH), and FH-15 can be applied. Management includes:

- Psychoeducational interventions (e.g., Blood Glucose Awareness Training - BGAT II)
- Behavioral therapy
- Use of continuous glucose monitoring (CGM)
- Insulin dose optimization

Assessment and Prevention

Key strategies for risk assessment and prevention include:

- Routine screening for history of hypoglycemia, IAH, and FoH
- Patient education on risk factors, recognition, prevention, and treatment
- Glucagon prescription and caregiver training for administration
- Medication review at each visit

Special attention is warranted during intercurrent illnesses, as these can destabilize glucose control and increase hypoglycemia risk. Insulin dosing and regimens must be reassessed during infections, surgery, or changes in diet. It is worth noting that medication interactions may also precipitate hypoglycemia. Sulfonylureas interact with many drugs including fluoroquinolones, clarithromycin, sulfamethoxazole-trimethoprim, metronidazole, and fluconazole. Stopping sulfonylureas and switching to other pharmacotherapy for diabetes mellitus should be considered.

Treatment of Hypoglycemia in Diabetes

Level 1 and 2 (Mild to Moderate)

- Oral carbohydrate intake: 15g of glucose (e.g., 4 tablets, 5 sugar cubes, 150 ml fruit juice, 1 tbsp honey)

Level 3 (Severe)

- If conscious: 20 gm oral carbohydrates
- If unconscious:
  - **Home**: 1 mg SC/IM or 3 mg intranasal glucagon
  - **Hospital setting**: 1 mg SC/IM or 3 mg intranasal glucagon or 25 gm IV dextrose

It must be noted that glucagon effectiveness is reduced in patients with alcohol ingestion, prolonged fasting, liver disease, or those only on secretagogues.

Blood glucose should be checked again after 15 minutes. Repeat treatment as above if blood glucose remains <70 mg/dL and after treatment of hypoglycemia, consume usual meal or snack due at that time of day else consume a snack containing 15g carbohydrate and a protein source.

Emerging Concepts

IAH and impaired counter-regulatory responses are reversible. Avoiding hypoglycemia for 2 days to 3 months can restore symptom awareness and hormone responses. Structured programs such as HypoCOMPaSS, HAATT, BGAT, and DAFNE-HART improve outcomes through:

- Frequent provider-patient contact
- Individualized education
- Reinforcement of behavioral change

Part II: Hypoglycemia in Non-Diabetic Individuals

Overview

Hypoglycemia in non-diabetic adults is rare and often presents a diagnostic challenge. Unlike those with diabetes, where hypoglycemia is a somewhat predictable side effect of pharmacotherapy, in non-diabetics, it often poses a diagnostic challenge. It may be the result of a broad array of metabolic, hormonal, or even neoplastic disorders. Diagnosis requires a thorough evaluation of patient history, clinical examination, and biochemical testing.

Diagnosis of Hypoglycemia

Diagnosis can be confirmed based on the **Whipple's Triad**:

1. Symptoms of hypoglycemia
2. Low plasma glucose

3. Resolution of symptoms after glucose normalization

If blood glucose levels are low but there are no symptoms of hypoglycemia, it is crucial to consider causes of artefactual low glucose. It can occur due to leukocytosis, reticulocytosis, or thrombocytosis.

Classification by Clinical Status

- **Well-appearing individuals**: Suggests endogenous hyperinsulinism or idiopathic postprandial hypoglycemia. Accidental, surreptitious, or factitious hypoglycemia must be ruled out.
- **Ill-appearing individuals**: Points toward critical illnesses or hormone deficiency disorders.

Etiologies

Insulin-Mediated Hypoglycemia

1. **Exogenous insulin** administration or use of **insulin secretagogues** (e.g., sulfonylureas)
2. **Insulinoma** (most common endogenous cause)
3. **Functional beta cell disorders (nesidioblastosis)**
4. **Noninsulinoma pancreatogenous hypoglycemia**
5. **Insulin autoimmune syndrome (IAS)**:
   - Anti-insulin antibodies
   - Anti-insulin receptor antibodies

Non-Insulin Mediated Hypoglycemia

1. **Critical illness**: Sepsis, renal, hepatic, or cardiac failure
2. **Hormonal deficiency**: Cortisol or growth hormone deficiency
3. **Non-islet cell tumor hypoglycemia (NICTH)**: Often due to tumors secreting insulin-like growth factor
4. **Drug-induced**: Moderate-quality evidence for alcohol, quinine, gatifloxacin, pentamidine, and indomethacin. Low-quality evidence for artemisinin derivatives, chloroquine, and lithium

Approach to Diagnosis

Hypoglycemia can be:

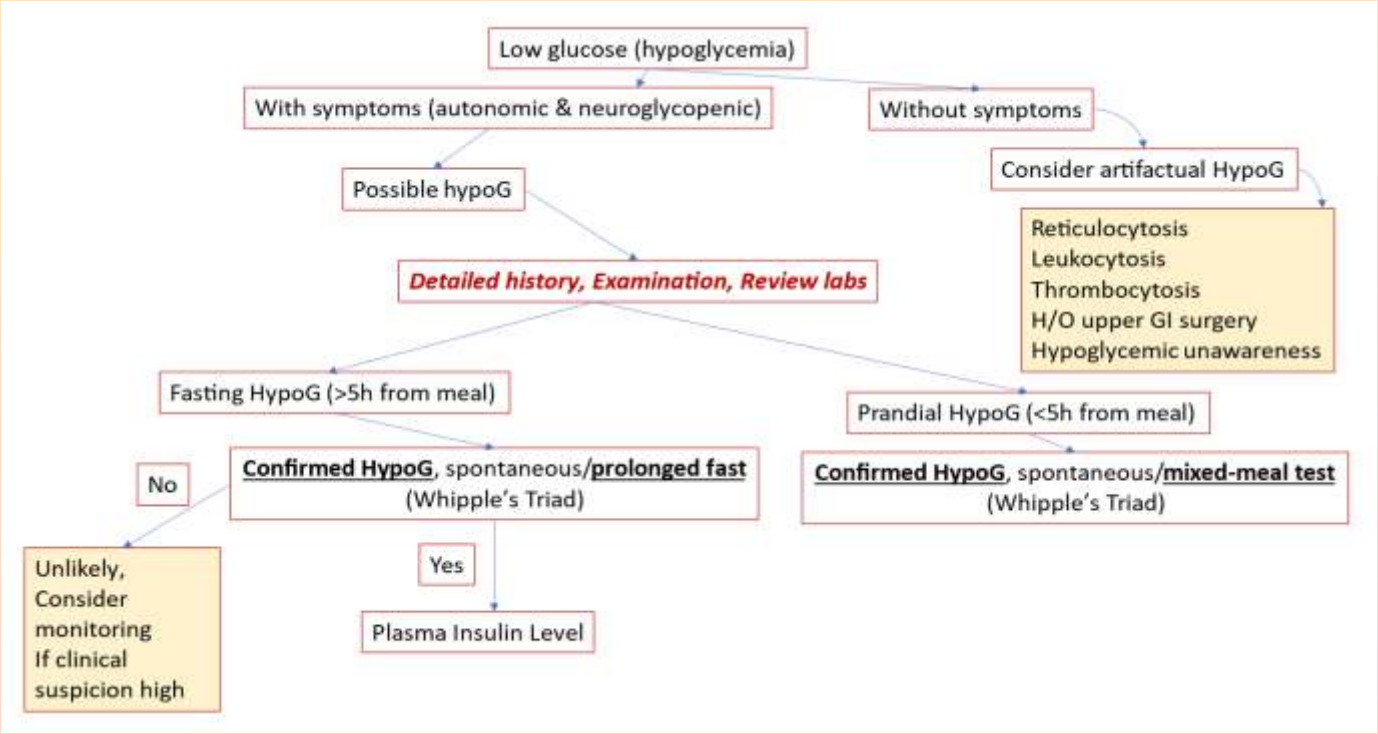
- **Fasting** (>5 hours post-meal)
- **Prandial/postprandial** (<5 hours post-meal)

Evaluation includes:

- Plasma insulin, C-peptide, and beta-hydroxybutyrate (BHOB)
- Sulfonylurea/meglitinide screen
- Imaging (CT/MRI/Endoscopic USG) for insulinoma
- Hormonal evaluation for cortisol and growth hormone
- Selective arterial calcium stimulation testing for pancreatic insulin sources

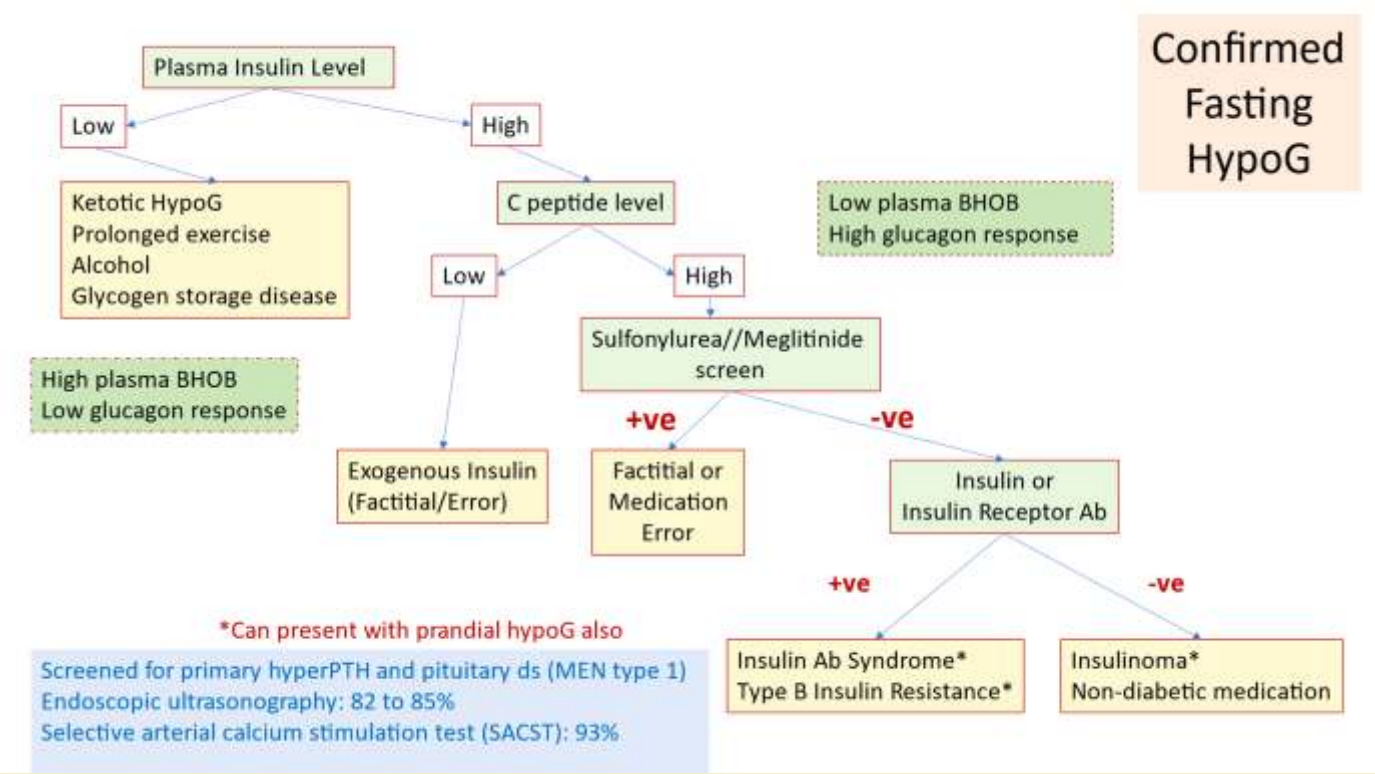
BHOB and glucagon stimulation tests help differentiate insulin-mediated from non-insulin causes. Figure 1 (a-c) shows the approach to hypoglycemia in non-diabetic individuals and table 1 details the various investigations required in the workup for hypoglycemia in non-diabetic individuals.

Figure 1a. Approach to hypoglycemia in non-diabetic individuals



HypoG- hypoglycemia, BHOB- beta hydroxybutyrate, Ab- antibody, hyperPTH- hyperparathyroidism

Figure 1b. Approach to fasting hypoglycemia (>5 hours from meal)



HypoG- hypoglycemia, H/O- history of, mo- months

Figure 1c. Approach to prandial hypoglycemia (<5 hours from meal)

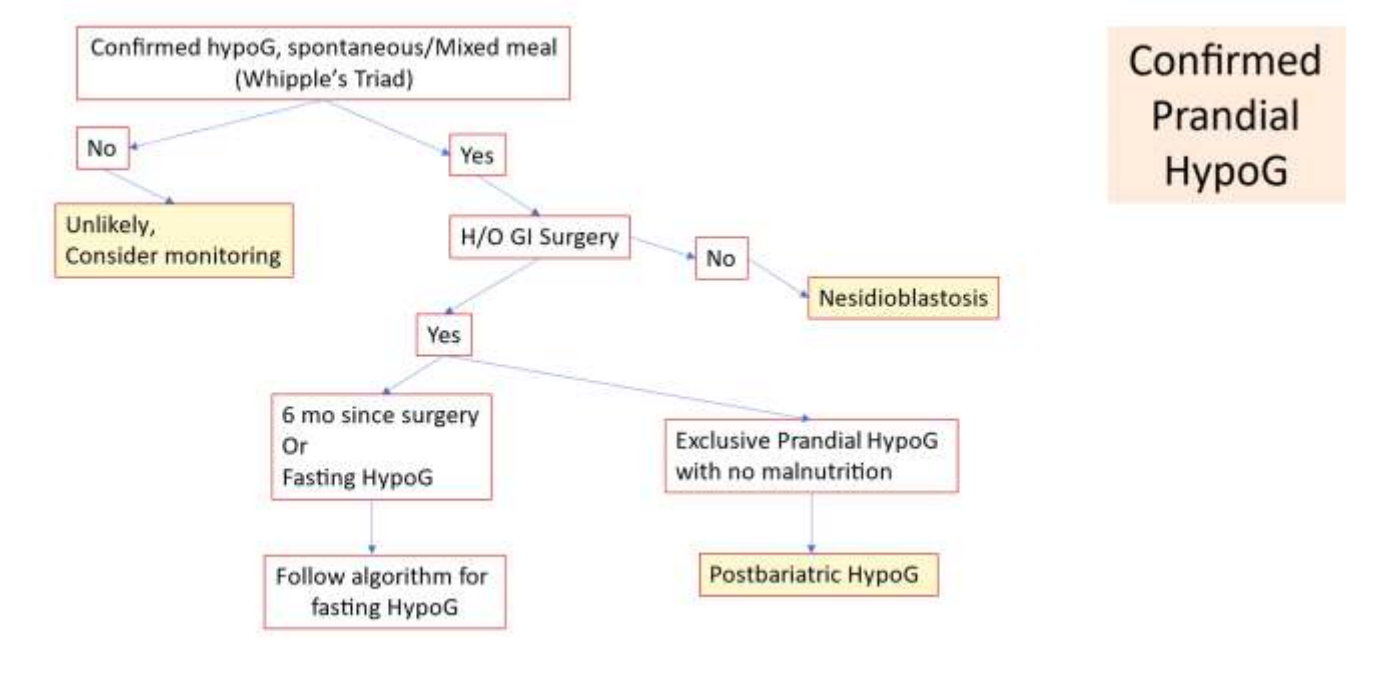


Table 1. Investigations and their interpretation in the diagnostic algorithm for hypoglycemia in non-diabetic individuals (BHOB: beta hydroxy butyrate; NIPHS: non-insulinoma pancreatogenous hypoglycemia; PGBH: post gastric bypass hypoglycemia; OHA: oral hypoglycemic agent; IGF: insulin like growth factor; NICTH: non-islet cell tumor hypoglycemia)

Symptoms signs or both	Glucose (mg/dL)	Insulin (µU/L)	C peptide (nmol/L)	Proinsulin (pmol/L)	BHOB (mmol/L)	Glucose increase after glucagon (mg/dL)	Circulating OHA	Antibody to insulin	Diagnostic interpretation
No	<55	<3	<0.2	<5	>2.7	<25	No	Neg	Normal
Yes	<55	>=3	<0.2	<5	<=2.7	>25	No	Neg	Exogenous insulin
Yes	<55	>=3	>=2	>=5	<=2.7	>25	No	Neg	Insulinoma, NIPHS, PGBH
Yes	<55	>=3	>=2	>=5	<=2.7	>25	Yes	Neg	OHA
Yes	<55	>=3	>=2	>=5	<=2.7	>25	No	Pos	Autoimmune insulin synd
Yes	<55	<3	<0.2	<5	<=2.7	>25	No	Neg	IGF (NICTH)

Treatment in Non-Diabetics

- **General dietary advice**: Frequent, small meals; avoid simple sugars, alcohol, and caffeine
- **Education and awareness:** Patients and caregivers must be educated about recognizing signs and symptoms of hypoglycemia and glucagon use, especially in recurrent or unexplained cases.
- **Targeted treatment**:
  - **Insulinomas**: Surgical resection is the primary treatment modality. Medical management with diazoxide or somatostatin analogues can be used in patients unfit for surgery. Ultrasound-guided ethanol ablation can also be done in selected individuals
  - **Hormone deficiencies**: Hormone replacement
  - **Nesidioblastosis**: Treated with diazoxide or surgical resection
  - **Autoimmune hypoglycemia (IAS)**: Often self-limiting; may require steroids or immunosuppressants in severe cases
  - **Drug-induced**: Withdrawal of the offending agent
  - **Post-bariatric surgery hypoglycemia (PGBH)**: Results from exaggerated insulin response. Management includes: dietary modification (low GI diet), and acarbose. In some cases, subtotal pancreatectomy or restoration of gastric anatomy may be required.

Conclusion

Hypoglycemia is an important medical emergency that requires strategic evaluation and treatment in diabetic and non-diabetic populations. In individuals with diabetes, the focus lies on medication-related risk, impaired awareness, and behavioral management. On the other hand, in non-diabetics, the emphasis is on meticulous diagnostic workup to identify any underlying disorders. Education of patient and caregivers is an important aspect in both populations. Regular follow up is also essential. Patients at risk should be identified and appropriate management initiated to reduce the burden of hypoglycemia.

Key Points

1. **Frequent complication in diabetes:** Hypoglycemia is frequent in diabetics on insulin or secretagogues.
2. **Impaired Awareness:** IAH increases risk of event of severe hypoglycemia; occurs with repeated hypoglycemia episodes, long-standing diabetes, and neuropathy.
3. **Fear of Hypoglycemia:** Leads to underdosing of insulin or overeating, hampering glycemic control; common in young T1DM patients.
4. **Non-Diabetic Causes:** Rare and requires evaluation; may be due to some underlying pathology like insulinomas, autoimmune syndromes, critical illness, or hormone deficiencies.
5. **Management:** Emergency management is with glucagon or glucose; patient education is an important aspect; specific treatment for underlying disorder

Suggested Readings

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पहली पाठशाला

माँ की कोख शिशु की पहली पाठशाला ,

उसे पोषण संस्कार दें , न बनाए धूम्रशाला मधुशाला ।

व्याख्या : गर्भधारण से लेकर अगले नौ महीने तक वह माँ के गर्भाशय (कोख) में उसका निवास और उसकी पाठशाला होती है । नाभि धमनी द्वारा माँ उसे पोषण प्रदान करती है । इस बीच माँ जो कुछ खाती-पीती है, करती है, सुनती-देखती है वह सब अत्यंत सूक्ष्म प्रक्रियाओं के माध्यम से भ्रूण-शिशु को प्रतिध्वनित, प्रतिदृश्य, प्रतिगर्हण होता रहता है । महाभारत के युद्ध में अर्जुन द्वारा पत्नी सुभद्रा को चक्रव्यूह भेदन का रहस्य गर्भस्थ शिशु अभिमन्यु केवल अंतिम द्वार के पूर्व त्क का विवरण सुन पाया था क्योंकि तब तक माँ सुभद्रा को नींद लग चुकी थी । इसलिए अभिमन्यु अंतिम द्वार तक पहुँच तो गया पर वह उसे भेद न पाया और मारा गया । यह तो हमारे प्राचीन इतिहास की वस्तु है । परंतु अब वैज्ञानिक परीक्षणों से यह सिद्ध हो चुका है कि होने वाली संतति के मानसिक, बौदध्कि और शारीरिक विकास में गर्भकाल में माँ की आदतों जैसे धूम्रपान, मदिरापान, संगीत, कला, हर्ष, विषाद ,क्रोध का असर भ्रूण के ऊपर पड़ता है । धूम्रपान के कारण माँ की कोख में पल रहे शिशु को आगे चल कर धूम्रपान की आदत , मानसिक विकार या तंत्रिका संबंधी दोष हो सकते हैं । लेखक के निजी

सुश्री भावना पाँडेय के सौजन्य से

अनुभव में एक चिकित्सिका जिसने पूरे गर्भकाल में धूम्रपान करना नहीं छोड़ा उसके नवजात शिशु को जन्मजात अयुक्त मेरुदंड (SPINA BIFIDA) की शिकायत हुई और वह तमाम जटिल शल्य क्रियाओं के बावजूद अपने पैरों पर खड़ा न हो सका । इतनी भयंकर सजा उस मासूम को अपनी माँ के धूम्रपान के चलते भुगतना पड़ा । इस बात का दुख उस चिकित्सिका माँ को आज तक है । इसी प्रकार कर्नाटक से आई मेरे एक अन्य सुपरिचित ने अपनी आप बीती बताई कि गर्भावस्था में उसने जिस इंग्लिश उपन्यास को पढ़ा था उसके नायक की भांति उसकी कन्या अल्पावस्था में वही हाव-भाव करने लगी थी । एक सुप्रसिद्ध संगीत दम्पति की बेटी भी छोटी उम्र से संगीत में अभिरुचि लेने लगी । इन तमाम साक्ष्यों की पृष्ठभूमि में यह कहना अनुचित न होगा की माँ की कोख गर्भस्थ शिशु की पहली पाठशाला होती है । प्रधान शिक्षक होती है माँ और पिता सहायक शिक्षक ।

– डा0 श्रीधर द्विवेदी

वरिष्ठ हृदय रोग चिकित्सक, नेशनल हार्ट इंस्टीट्यूट

Doctor–Patient Relationship: A Unique Bond

Introduction:

The doctor–patient relationship is one of the oldest and most sacred human connections. Unlike any other professional association, it transcends material exchange. It is not just a contractual bond, but a humane, ethical, and emotional connection based on trust, compassion, and the shared goal of restoring health. The uniqueness lies in the fact that here, one person entrusts their body, mind, and even life into the care of another, believing that the doctor will act in their best interest.

Unlike commercial transactions, where the purpose is material exchange, the doctor–patient relationship is fundamentally rooted in **trust and compassion**. This is what makes it stand apart from all other human bonds.

Why it is Unique?

The uniqueness of this relationship comes from several dimensions:

- **Trust at the core**: A patient comes with hope, surrendering to the doctor's judgment. This faith is implicit and unquestioned, especially in moments of crisis.
- **Responsibility of life & well-being:** Doctors deal with life-and-death situations every day. The prescription written by them & interventions done by a professional help in recovery of critically ill patients.
- **Blend of science and humanity**: Medicine is not only about knowledge, investigations, or drugs—it is also about the art of healing, listening, and reassuring.
- **Sacred duty**: At its highest level, this relationship is beyond business. It is service, where the doctor becomes a custodian of health, and often, an instrument of the Divine in restoring well-being.

What Doctors Offer to the Patients? Doctors are not only healers of the body, but also comforters of the mind and spirit, they serve their patients in both tangible and intangible ways:

- **Medical expertise**: Knowledge, skill, and clinical judgment to diagnose and treat.
- **Compassion and care**: A soothing word, a reassuring smile, or a patient hearing often works as powerfully as medicines.
- **Hope and confidence**: Doctors install faith that recovery is possible, giving strength to fight disease.
- **Ethical responsibility**: A commitment to confidentiality, fairness, and prioritizing patient welfare above personal gain.
- **Healing touch**: Many patients feel half cured simply by interacting with a caring doctor.

What Doctors Get in Return from the Patients? The relationship is never one-sided. Patient enriches a doctor's life in multiple ways far beyond financial means.

- **Respect and gratitude**: The most precious reward is the heartfelt "thank you" or folded hands of a recovering patient.
- **Satisfaction (Sakoon)**: Nothing equals the joy of seeing a sick patient who walks out after full recovery. This "sakoon" is beyond money.
- **Learning and experience**: Every patient teaches a doctor something new—about disease, resilience, and life.
- **Material rewards**: Money, recognition, and career growth naturally follow, but they are secondary.
- **Divine connection**: Many doctors experience a profound sense of Divine connection, feeling that they are instruments in the hands of God to bring health and comfort to the sick & needy ones.

Why Misunderstanding? Despite this noble foundation, the relationship is not immune to strain. Misunderstandings often arise due to:

- **Unrealistic expectations**: Patients often expect quick fixes and miracles, forgetting that medicine has limitations.
- **Communication gap**: Medical jargon or hurried consultations may make patients feel neglected.
- **Commercialization of healthcare**: Rising costs and over-dependence on investigations create suspicion.
- **Stress on both sides**: Overworked doctors and anxious patients may misinterpret each other's actions.
- **Social influences**: Media reports of negligence — even when rare — erode trust, affecting even well-meaning doctors.

These gaps highlight the urgent need for stronger bridges of communication and empathy.

How to Improve this Relationship Further

The very essence of this relationship begins with trust. Improving this sacred bond is possible with conscious effort from both doctors and patients. Both sides must understand that they are fighting for the same cause, having a single goal of bringing the patient out of the woods for which they have to work as a team not in isolation. This relationship can be made stronger and more fulfilling by the following simple measures:

Communication – The Lifeline

Effective communication transforms medical care from a transaction into a healing journey. It is not just about explaining diagnoses and prescriptions; it is about listening without judgment, acknowledging concerns, and ensuring that the patient feels heard and valued.

Empathy – The Healing Touch Beyond Medicine

While medical knowledge can treat diseases, empathy heals hearts. A gentle hand on the shoulder, a reassuring word, or a warm smile can sometimes be as therapeutic as medicine itself.

Mutual Respect – The Glue That Holds the Bond

Respect in this relationship is mutual. Patients respect the doctor's knowledge, skill, and dedication, while doctors respect the patient's experiences, beliefs, and right to make informed decisions.

Shared Responsibility – Walking the Path Together

The best outcomes arise when both patient and doctor take shared responsibility.

"The doctor gives what the patient seeks; the patient gives what the doctor lives for. In this quiet exchange lies the miracle of healing."

Conclusion

The doctor–patient relationship is not merely professional—it is sacred. It thrives on trust, compassion, honesty, and respect. Doctors offer their knowledge, care, and healing touch, while patients reward them with gratitude, faith, and the priceless satisfaction of seeing life restored. Misunderstandings arise when expectations clash with reality, but these can be resolved with open communication and empathy. Ultimately, this bond is a divine partnership, where science meets humanity, and healing becomes both a duty and a prayer.

– Dr. Y. K. Arora

Relevant Quotes About Medical Profession

1. You may practice any pathy ,
   Allopathy, ayurveda, Unani,
   Homeopathy or naturopathy,
   But you must practice sympathy.
2. **'अष्टादश पुराणेषु व्यासस्य वचनद्वयम्, परोपकारः पुण्याय पापाय परपीडनम्'** -इसका अर्थ है कि महर्षि वेदव्यास जो अट्ठारह पुराणों के रचयिता हैं उन्होंने में दो बातें स्पष्ट रूप से लिखी हैं कि दूसरों का भला करना ही पुण्य है और किसी को पीड़ा पहुँचाना ही पाप है । यही बात चिकित्सा शास्त्र का मूल तत्व है ।
3. **'परहित सरिस धर्म नहिं भाई, पर पीड़ा सम नहिं अधमाई'** । इसका आशय है कि दूसरों की भलाई करने से बड़ा कोई धर्म नहीं है, और दूसरों को दुःख पहुँचाने के समान कोई नीचता या पाप नहीं ।

(महाकवि तुलसीदास , रामचरितमानस, उत्तरकांड)

4. **न त्वहं कामये राज्यं न स्वर्गं नापुनर्भवम् ।**
   कामये दुःखतप्तानां प्राणिनामार्तिनाशनम् ।।
   काशी हिन्दू विश्वविद्यालय के संस्थापक पंडित मदनमोहन मालवीय जी के आप्त वचन जो विश्वविद्यालय के प्रत्येक छात्र के लिए आदर्श वाक्य है । इन पंक्तियों का अर्थ है - मैं राज्य की कामना नहीं करता, मुझे स्वर्ग और मोक्ष भी नहीं चाहिए। मैं दुःख से पीड़ित प्राणियों के दुःख दूर करने में सहायक हो सकूं, यही मेरी कामना है।
5. **'चिकित्सतात् पुण्य तमं न किंचित'** – यह चिकित्सा विज्ञान संस्थान (IMS,BHU) ,काशी हिन्दू विश्वविद्यालय का घोष वाक्य है जो स्वयं विश्वविद्यालय के संस्थापक पंडित मदनमोहन मालवीय जी द्वारा निर्दिष्ट किया गया है । इसका अर्थ है कि चिकित्सा से बढ़ कर कोई अन्य पुण्य कार्य नहीं है ।
6. Where the eyes share your grief,
   Ears eager to hear all your calls,
   Hands ready always render relief,
   Heart filled with compassion,
   Mind guided by scientific reasoning,
   Nurture thy temple of healing & learning.

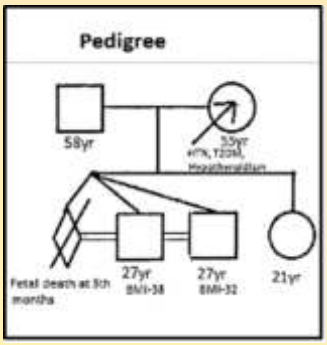
(Source: Swasthya Subhashit -2024)

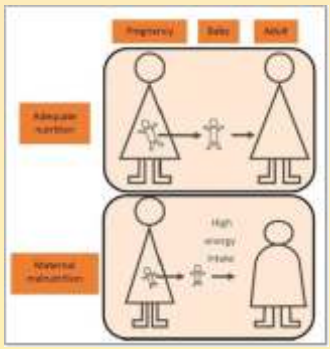
TRIPLET PREGNANCY WITH FETAL PAPYRACEUS: CARDIOVASCULAR RISK FACTOR FOR SURVIVING SIBLINGS

Introduction

Triplet pregnancy are rare events that affect approximately 93 in 1,00,000 deliveries in the world. Triplet pregnancy are associated with higher risk of fetal and maternal morbidity and mortality compared to twin and singletons. To support efficient delivery of nutrients and oxygen to the developing fetus, pregnant females have greater cardiac output, increased vascular compliance, and blood volume expansion compared with the non-pregnant state. The higher the number of fetuses in the pregnancy the greater the risk for early birth. Premature babies are born before their bodies and organ system have completely matured. These babies are often small with low birth weight (less than 2500 gram. They may need help breathing, eating, fighting infection and staying warm.

Case: A 28-year-old lady conceived triplet pregnancy and at the time of delivery it was realized that the third foetus was papyraceous while two other male infants were premature (Weight 1.7Kg) necessitating incubation care for one month. The papyraceous embryo had died in utero at 5th month of pregnancy (Figure.1). 55-year-old mother presented to us for her obesity (BMI-31) and hypothyroidism for last 15 years and hypertension and diabetes for last 5 years Both surviving male children who are now 27 years are suffering from obesity the elder one has body mass index of 38 and the younger one carries BMI of 32. Both of them have dyslipidemia and hypertension.





Risk to mother with triplet pregnancy:

- Pregnancy induced Hypertension.
- Gestational Diabetes.

Risk to offspring:

- Malnutrition during fetal development increases susceptibility to metabolic syndrome, which includes obesity, type 2 diabetes (T2DM), hypertension (HTN), hyperlipidemia, and complications that can include coronary artery disease (CAD).

Fetal Papyraceous:

Fetus papyraceous or compressus is a state which occurs if one of the fetuses dies early. The dead fetus is flattened, mummified and compressed between the membranes of the living fetus and the uterine wall. It may occur in both varieties of twins, but is more common in monozygotic twins and is discovered at delivery or earlier by sonography. If a loss occurs in first trimester, the affected fetus simply "Vanishes" by resorption. If the death occurs during second trimester, a fetus papyraceous or compressus may form. If death occurs late in pregnancy, there may be death of the other fetus in presence of vascular anastomosis.

Barker's Hypothesis A hypothesis proposed in 1990 by the British epidemiologist David Barker that intrauterine growth retardation, low birth weight, and premature birth have a causal relationship to the origins of hypertension, coronary heart disease, and non-insulindependent diabetes, in middle age. Barker's hypothesis derived from a historical cohort study that revealed a significant association between the occurrence of hypertension and coronary heart disease in middle age and premature birth or low birth weight.

It would be interesting to study the long-term consequence of Fetal Papyraceous pregnancy on thyroid and cardiovascular system in the mother as well both surviving sons in long term.

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– Shridhar Dwivedi, Anshika Gulati, Sheikh Umar

5th September

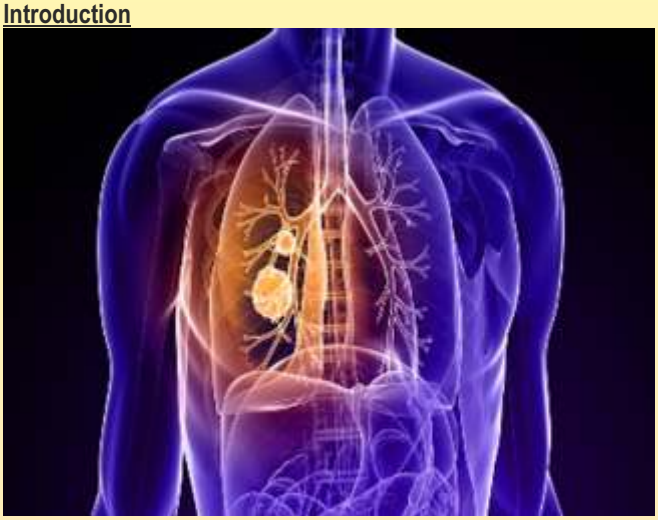
Happy Teacher's Day !

Flowing in same stream,
Sharing same dream,
Shaping young creams,
Teacher to taught,
Thank Almighty ,
Opportunity so supreme.

– Dr Shridhar Dwivedi

LUNG CANCER: FEW FACTS & UPDATES

Introduction



Lung cancer remains one of the most formidable public health challenges globally. It is the leading cause of cancer-related deaths, accounting for approximately 1.8 million deaths annually. Early detection and prevention are critical, but this malignancy is often diagnosed at advanced stages due to subtle early symptoms. Understanding the risk factors, clinical presentation, and available diagnostic and therapeutic tools can significantly impact outcomes.

Risk Factors for Lung Cancer

Lung cancer arises due to a complex interplay between environmental exposures and genetic susceptibility. Major risk factors include:

A. Tobacco Smoking

- The most significant risk factor, responsible for over 85% of all lung cancer cases.
- Risk increases with the duration and quantity of smoking (pack-years).
- Includes cigarettes, cigars, and pipe smoking, vaping.

B. Secondhand Smoke

- Passive smokers are at an increased risk, particularly children and spouses of smokers.

C. Occupational and Environmental Exposures

- Asbestos, radon gas, arsenic, chromium, diesel exhaust, and silica.
- High exposure is seen in industries like mining, construction, and manufacturing.

D. Air Pollution

- Urban pollution, especially PM2.5 (particulate matter), increases lung cancer risk.
- Indoor pollutants like biomass fuel smoke contribute significantly in developing countries.

E. Genetic Susceptibility

- Family history of lung cancer raises risk.
- Mutations in genes like EGFR, ALK, KRAS, and TP53 etc. can predispose individuals.

F. Pre-existing Lung Disease

- Chronic obstructive pulmonary disease (COPD), pulmonary fibrosis, and tuberculosis scarring etc. increase the risk.

G. Radiation Exposure

- Prior radiotherapy to the chest, especially for breast or lymphoma cancers.

Clinical Features

Lung cancer often remains asymptomatic in the early stages. Symptoms typically appear when the disease is advanced.

Common Symptoms:

- Persistent cough (lasting more than 2 weeks),
- Hemoptysis (coughing up blood),
- Dyspnea (shortness of breath),
- Chest pain, especially when deep breathing or coughing,
- Hoarseness of voice,
- Unexplained weight loss and fatigue,
- Frequent chest infections (pneumonia or bronchitis)

Paraneoplastic Syndromes (non-metastatic systemic manifestations):

Hypercalcemia, SIADH (syndrome of inappropriate antidiuretic hormone secretion), Cushing's syndrome, Neurological syndromes (e.g., Lambert-Eaton myasthenic syndrome).

Screening for Lung Cancer

Early detection through screening programs significantly improves survival rates.

Eligibility Criteria for Screening (Based on NCCN/USPSTF Guidelines):

- Age: 50–80 years
- Smoking history: ≥20 pack-years
- Current smoker or quit within the past 15 years

Screening Modality:

- Low-Dose Computed Tomography (LDCT) chest-
- Proven to reduce mortality by detecting cancer at earlier, more treatable stages.
- Performed annually for high-risk individuals.

Solitary Pulmonary Nodule:

solitary pulmonary nodule (SPN) is a single, well-defined, rounded lesion seen on chest imaging that is less than or equal to 30 mm (3 cm) in diameter, surrounded by normal lung parenchyma, and not associated with other abnormalities like atelectasis, pleural effusion, or lymphadenopathy.

Management Based on Size and Risk (BTS Guidelines Summary) (follow up / management)

Solid Nodules

Size	Low Risk	Intermediate Risk	High Risk
<5 mm	No follow-up	–	–
5–6 mm	CT at 12 months	–	–
6–8 mm	CT at 3 & 12 months	Consider PET-CT	Consider biopsy/resection
≥8 mm	CT or PET-CT based on risk	PET-CT & Herder model	Biopsy or surgery

Subsolid Nodules

Type	Recommendation
<5 mm ground-glass	No follow-up
≥5 mm ground-glass	CT at 3 months; then annually for up to 5 years
Part-solid ≥6 mm solid component	PET-CT, biopsy, or surgery based on risk

VI. Volume Doubling Time (VDT)

- VDT <400 days ⟶ Suggests malignancy
- VDT >600 days ⟶ Likely benign
- Software-based volumetry is preferred over manual measurement

Diagnostic Modalities

A. Imaging

- **Chest X-ray**: Often the first investigation but lacks sensitivity for small lesions.
- **CT Scan (Contrast-enhanced):** More sensitive for tumor localization and staging.
- **PET-CT Scan:** Detects metabolic activity of the tumor and distant metastases.

B. Bronchoscopy

- Used to visualize airways and collect biopsies of central lesions.

C. Biopsy Techniques

- **CT-guided transthoracic needle biopsy**: For peripheral lung lesions.
- **Endobronchial ultrasound (EBUS):** For mediastinal, hilar, sub-carinal lymph node sampling, central lung parenchymal lesions, pre-operative lung cancer staging.

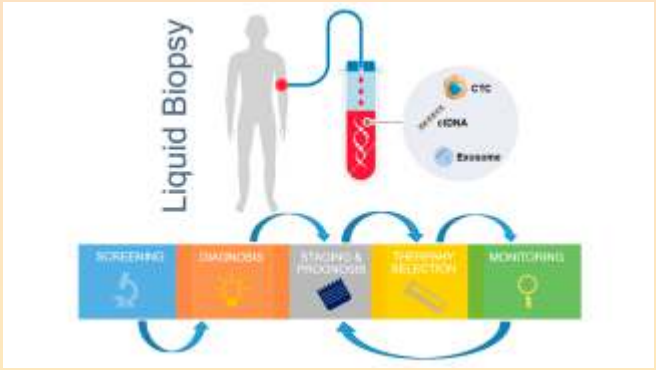
- **Cryobiopsy**- helps to get good lung mass chunks for biopsy without disturbing normal architect and increases yield of diagnosis.
- **Thoracoscopy/VATS**: Minimally invasive surgical technique for biopsy and staging.

D. Molecular and Genetic Testing

- Essential for targeted therapy planning.
- Tests include EGFR, ALK, ROS1, KRAS, BRAF, MET, and PD-L1 expression.

E. Liquid Biopsy:

Non-invasive to minimally invasive technique allowing measurement for circulating tumour DNA(ctDNA), circulating tumour cells (CTCs), extracellular vesicles and exosomes, tumour educated platelets etc in blood, sputum, urine etc samples and helps to diagnose cancer as well as monitor treatment response. (sensitivity is low in early cancer stage)



5. Prevention

Primary Prevention:

- Smoking cessation: Most effective preventive measure.
- Public education campaigns on smoking hazards.
- Legislation: Banning smoking in public places and advertising.
- Nicotine replacement therapy (nicotine gums, patches, nasal spray) (available OTC)

- Medicines available in tablet form for smoking deaddiction: Varenicline, Bupropion (Prescription needed)

Environmental and Occupational Measures:

- Radon testing in homes.
- Use of protective gear and ventilation in workplaces with exposure risks.
- Reducing air pollution through environmental policy changes.

Treatment Modalities

Treatment is based on the type (NSCLC vs. SCLC) and stage of cancer, as well as patient health and molecular profile.

A. Surgery

- Preferred for early-stage non-small cell lung cancer (NSCLC).
- Types: Lobectomy, segmentectomy, wedge resection, pneumonectomy.

B. Radiation Therapy

- Used as primary therapy for inoperable cases.
- Stereotactic body radiation therapy (SBRT): For small, localized tumors especially less than 3cm.
- Palliative radiation: For symptom control.

C. Chemotherapy

- Common in advanced NSCLC and SCLC.
- Platinum-based regimens (cisplatin or carboplatin with pemetrexed, etoposide, etc.)

D. Targeted Therapy

- Highly effective for tumors with driver mutations.
- Examples:
- EGFR inhibitors: Osimertinib, erlotinib
- ALK inhibitors: Crizotinib, Alectinib, brigatinib
- ROS1 inhibitors: Crizotinib
- KRAS inhibitors: Sotorasib

E. Immunotherapy

- Checkpoint inhibitors (e.g., pembrolizumab, nivolumab, Durvalumab) revolutionized treatment in advanced NSCLC.
- Based on PD-L1/PD1 expression and tumor mutational burden.

F. Palliative and Supportive Care

- Focused on quality of life, pain management, and psychological support.
- Includes nutrition, respiratory therapy, and end-of-life planning.

Summary:

Lung cancer, while devastating, is increasingly manageable due to advances in screening, targeted therapy, and immunotherapy. The key lies in early detection and modification of risk factors, especially smoking cessation. A multidisciplinary approach involving pulmonologists, oncologists, radiologists, pathologists, and palliative care teams is essential for optimal outcomes.

With ongoing research into vaccines, liquid biopsies, and novel therapies, there is hope that lung cancer can be diagnose early and treatable completely.

If you or someone you know fits the high-risk profile, consult your doctor about lung cancer screening. Early detection saves lives.

– Dr. Deepak Choudhary
HOD Pulmonology, NHI
– Dr. Kirti Bhise
DTCD Resident

DON'T MISS A BEAT

WORLD HEART DAY 29 SEP

ऐसा कुछ न करो कि दिल की धड़कने बंद हो जायें,
धमनियां बंद, जान के लाले, छल्ले डालने पड़ जायें।

सेहत की सात सीढ़ियाँ,
बचाती आपकी पीढ़ियाँ।
ये सात सीढ़ियाँ हैं:

1 सैर - व्यायाम,
2 ध्यान - प्राणायाम,
3 न करें धूम्रपान,
4 न करें मद्यपान,
5 शाकाहार युक्ताहार,
6 समय पर सोना,
7 समय पर जगना ।

जब आप ये सब करेंगें तो आपके बच्चें भी यही करेंगें। बहुत पुरानी कहावत है - मां बाप जो करेंगें, जो खायेंगें जो पियेंगें बच्चे वही करेंगें, वही खायेंगें, वही पियेंगें।

– डा0 श्रीधर द्विवेदी, वरिष्ठ हृदय रोग चिकित्सक, नेशनल हार्ट इंस्टीट्यूट

At 52, Rajesh had built a comfortable life — a stable job, a loving family, and the joy of weekend feasts. Fried snacks, butter-laden curries, and sweet desserts were part of every celebration. Exercise was an afterthought. Life was good — until one morning, it wasn't.

Rajesh woke up with chest discomfort and shortness of breath. A quick trip to the hospital revealed he had suffered a mild heart attack. That day became a turning point, not just for his health but for how he looked at food and life itself.

The First Lesson: Cutting Down on Fats

Sitting across from the dietitian, Rajesh learned that it wasn't just about avoiding oily food. It was about understanding fats. Saturated and trans fats, found in ghee-laden parathas and deep-fried samosas, had been slowly narrowing his arteries.

"Replace them with healthy fats," she said gently. "Use olive oil. Eat a few almonds. Add avocado to your toast."

She continued, "Saturated fats increase your LDL — that's the bad cholesterol — and they make your arteries stiff and narrow. That's what leads to heart attacks like the one you had. But when you shift to unsaturated fats, like the ones in nuts, seeds, and plant oils, they actually help your heart stay flexible and reduce inflammation."

Color on His Plate: Fruits and Vegetables

His next challenge was adding more greens and colors to his plate. Earlier, his plate was mostly brown — chapati, rice, and fried items. Now, it had become a canvas: spinach, tomatoes, bell peppers, oranges, and berries.

"Each color protects your heart in a different way," explained his daughter, who started helping him prepare meals.

The dietitian had told him, "Fruits and vegetables are packed with antioxidants and fiber. They lower blood pressure, help clean up cholesterol, and reduce the stress on your heart. The more variety in colors, the more diverse nutrients you're giving your body.

Whole Grains Over White Rice

One evening, Rajesh looked longingly at a bowl of white rice. But he reminded himself of the dietitian's advice.

"Switch to brown rice or millets. They're full of fiber and help reduce cholesterol."

He began enjoying oats in the morning, multigrain rotis for lunch, and quinoa khichdi for dinner. Over time, the cravings faded.

The dietitian had explained, "Whole grains release energy slowly, keeping your blood sugar stable. That's important because diabetes and heart disease often go hand-in-hand. Plus, the fiber in whole grains actually helps remove cholesterol from your body."

The Saga of Heart Attack

Heart attack usually not a bolt from blue,
Failed heart neither a one day due,
Arteries don't get blocked without a clue,
Take years inflamed atherosclerosed and blue.

Smoking bidi cigarette pipe pretty long,
Chewing tobacco gutka masala ding dong,
Strife torn life without exercise and song,
Fast city culture cut throat all ping pong.

Vegan for name sake lot of fat sweet and junk,
Harboring hostility heart burn obviously a punk,
Years of diabetes pressure central bulge no funk,
Chest pain breathlessness fainting spells debunk.

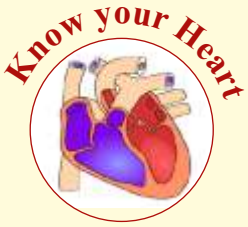
Started clean slate in utero silken unobtrusive conduit,
Diehard habits coronaries get clogged umpteen times,
Rhythm thrown hay wire embracing death with eyes shut,
Saga of heart attack tale of self destruction and rut.

– Dr. S. Dwivedi
Senior Consultant Cardiologist

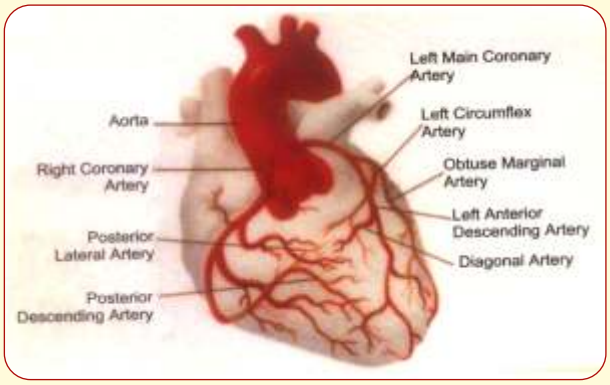
विश्व हृदय दिवस-२०२५

इस वर्ष का ध्येय वाक्य:
आपके दिल की थड़कन कभी बंद न हो,
हृदय की धमनियां कभी अवरूद्ध न हो ।

संकेत-धमनियां-खून की वह नलियां जिसने दिल को साफ खून मिलता है। अवरूद्ध-ब्लाकेज ।



Blood Supply of The Heart



Launch of '*Nursing Guide: Cleft Lip & Palate'* at National Heart Institute

New Delhi, August 31, 2025 — A significant milestone in the field of cleft care was marked with the launch of **'*Nursing Guide: Cleft Lip & Palate*'**, authored by **Dr. Karoon Agrawal, Dr Gargi Singhal, Dr Surabhi Srivastava, Dr Chirag Sharma, and Ms Mansha Arora**, at the **National Heart Institute**. The event was graced by eminent dignitaries and professionals committed to advancing healthcare and patient support.

The book was released by the **chief guest**, **Dr. D. S. Dubey**, Former Director of JIPMER Pondicherry, former director of PGIMS, Rohtak, former MCI inspector; the **Guests of honor**, **Dr. Vinod Sharma**, Vice CEO of NHI, **Ms. Mamta Carroll**, Senior Vice President of Smile Train, and **Ms. Renu Mehta**, Area Director – South Asia for Smile Train, whose organizations have been instrumental in empowering cleft care across the globe. **Dr Sunny Duttagupta**, Director Scientific Scholar publisher presented the book and narrated his experience in publishing this manual.

In a symbolic gesture of growth and sustainability, all dignitaries were warmly welcomed with saplings. The event highlighted the importance of specialized nursing care in managing children with cleft lip and palate, underlining how such resources empower nurses to provide safe, informed, and compassionate care. This book is an indication of *Atma Nirbharta* in medical education and training.

Dr Dubey emphasised the importance of vigilance in conducting safe surgery specially in children with cleft lip and palate. Dr Vinod Sharma appreciated the user-friendly design of the book and the content including a chapter on psychosocial considerations. Ms Mamta Carroll and Ms Renu Mehta stressed the need to perform safe surgery. Smile Train being a cleft care charity, safety comes first. All the dignitaries outlined the importance of nursing care during the perioperative period. This book is a ready reckoner for the nursing officers while taking care of children with cleft.

The book was appreciated as a practical, comprehensive guide that will serve as an essential tool for nurses, healthcare workers, and caregivers involved in cleft care. The dignitaries commended the efforts of Dr. Karoon Agrawal and his team in bridging the knowledge gap in this specialized field.

This event was successfully organised with the active involvement of Wg Cdr Nitin Vaish, Director operations NHI, Ms Chandra Zadoo, Counselor and coordinator, Departments of Quality, library, and Nursing. The book release was blessed by the auspicious presence of senior consultants Dr S Dwivedi, Dr RK Verma, Dr Arvind Prakash, Dr Suruchi Ladha, NBE residents, nursing incharges and nursing officers of NHI. It was very well coordinated by Mr Noone Gurung with full support of various staff of NHI.

The program concluded on a warm and cordial note with high tea, fostering meaningful discussions and collaborations among healthcare professionals, authors, and supporters of cleft care.

The launch of '*Nursing Guide: Cleft Lip & Palate'* not only celebrated the collective effort of medical experts but also reinforced the mission of improving patient care and quality of life for children born with clefts.

GP CORNER

VACCINATION IN CARDIOVASCULAR THERAPEUTICS

Cardiovascular disease are the leading cause of death worldwide, both in developing and in developed countries. Despite major advances in treatment of patients with cardiovascular disease, in terms of primary and secondary prevention, quite a significant number of these patients continue to experience major cardiovascular events or death. In spite of receiving appropriate preventive treatment, the occurrence of cardiovascular event in these patients are attributed to the term "residual cardiovascular risk, which is associated with the presence of various inflammatory states, including infection. Infections are known to trigger cardiovascular event, and therefore, there is a role of immunization in preventing the occurrence of such cardiovascular events. Infections are known to precipitate vascular event, both, denova in patient with no previous history, and acute extra survivation of underlying condition in those with pre-existing cardiovascular pathologies.

ASSOCIATION BETWEEN INFECTIONS & CARDIOVASCULAR DISEASE-

Acute infections are associated with transient increase in cardiovascular and cerebrovascular events. The underlying proposed mechanisms are

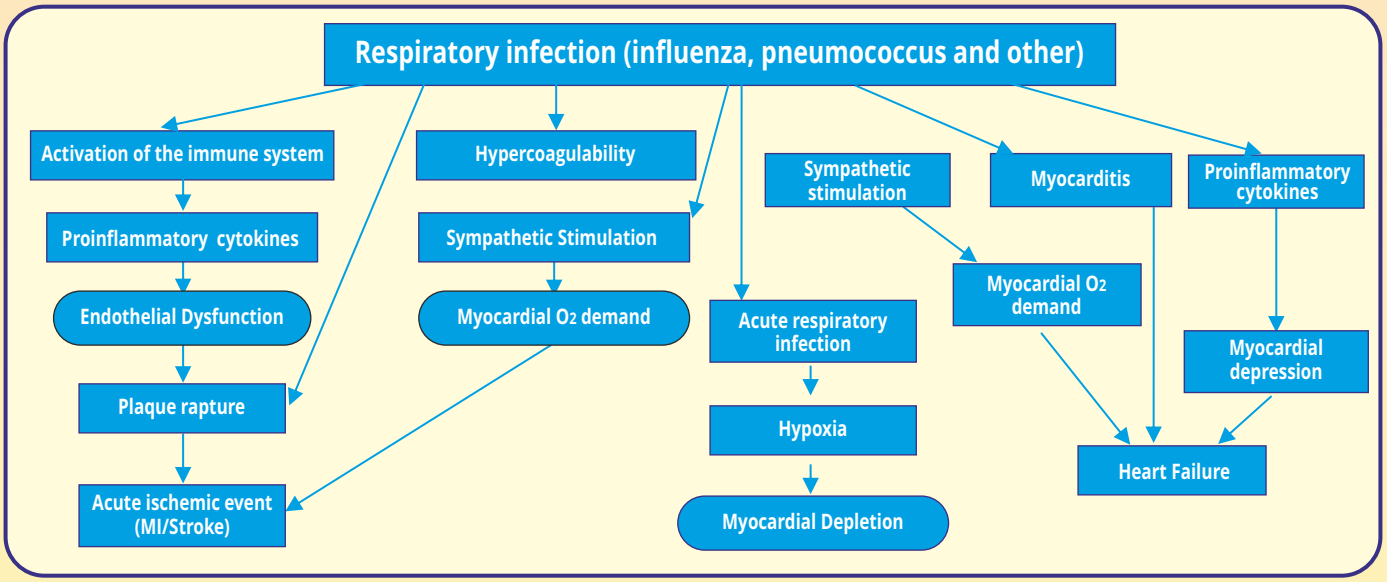
A. activation of immune system resulting in systemic inflammation,

B. generation of hypercoagulable state,

C. activation of sympathetic system and increased markedly oxygen demand.

All these interrelated mechanisms are known to results into endothelial dysfunction, plaque rupture, acute coronary syndrome, myocardial depression and heart failure.

Besides this, direct myocardial damage (myocarditis) has been seen and resulting respiratory infection, hypoxemia which coexists with this condition further deteriorates the oxygen supplies to tissue and precipitates cardiovascular event.



VACCINES FOR CARDIAC PATIENTS

A. INFLUENZA VACCINE

There are four types of influenza viruses A, B, C and D. In humans it is the influenza A and B viruses that have clinical relevance. Influenza viruses are subdivided based on their surface protein as H and N with more than 130 subtypes.

Influenza B viruses have two lineages Victoria and Yamagata with multiple subgroups. The influenza virus typically cause annual epidemic usually in the winter season (between April and October in southern hemisphere. The increase in influenza cases during the winter month there is simultaneous increase in the cardiovascular event mainly acute Myocardial infarction and stroke and therefore there is a rationale of preventing this infection peak and cardiovascular event.

Influenza viruses have a have a high capacity to modify their antigenic component on their surface and therefore strain circulating annually change and even sometime more than one strain circulate in the same season and that is underlying basis for annual influenza vaccination.

Ideally the vaccine should be administered at the end of summer or early autumn (between march and april in southern hemisphere), as zero protection takes two to three weeks to achieve its significant level after vaccination and therefore generating an adequate antibody level prior to the onset of month with high viral circulation.

- In areas with marked seasonability, it is advisable to administer a new dose of influenza vaccine prior to the onset of high viral circulation even if the last dose of vaccine was given more than six months ago

  Special aspect with of a special aspect with influenza vaccine is that despite variation in viral strain, influenza vaccines have proven to be effective even when there is not complete correlation with circulating strains. Available vaccines and their implication influen influenza vaccine can be (containing two different strains of influenza and one lineage of influenza b virus) or quadrivalent (containing two strands of influenza a and two lineage of influenza b). It has been seen that elderly patients have a decreased immune response to various pathogens a phenomena called as in immunosenescence. It has also been observed that older individual experience a state of persistent inflammation known as inflammaging, which also negatively affect the immune response. To compensate for this reduced immune response to both pathogen and vaccination, enhanced influenza vaccine have been developed. Adjuvanted vaccines (using M F 59 M) and oil in water emulsion (close and high dose vaccines) (containing 60 microgram of each viral antigen rather than 15 microgram). These enhanced vaccines have been shown to be superior to standard vaccines both in terms of generating antibodies and in preventing hospitalization.
- Influenza vaccine can be administered simultaneously with other vaccine but should be given at different sites.
- In anticoagulated individual the vaccine should be given and should be administered in the deltoid region. There is no particular benefit of using intramuscular or deep subcutaneous route and preferred route should be one with which the operator is most experienced.
- Prolonged compression approximately 2 minutes should be applied to ensure hemostasis in anticoagulated patient.
- In anticoagulated patient using vitamin K antagonist, it should be confirmed that they are within the therapeutic range ideally with an INR of less than 2.5. For those using direct oral anticoagulant one dose can be omitted before vaccination.
- It is an inactivated (killed vaccine), therefore the viruses do not replicate in the body. Due to this reason, it can be administered to immunocompromised patient.
- Mild conditions such as rhinitis, cold, diarrhea or use of antibiotic are not a contraindication to receiving vaccine.
- Contraindication to this vaccination are rare and include a history of anaphylactic reaction to vaccine or any of its component. A history of Gullain-Barre syndrome within six weeks of vaccination is a relative contraindication.

B. PNEUMOCOCCAL VACCINE

Pneumococcal infections are leading cause of death worldwide. "*Streptococcus pneumoniae"* is responsible for causing pneumonia, meningitis or endocarditis. Pneumonia is a common community acquired infection. The pneumococcal infection has a bimodal distribution affecting mainly young children due to the immaturity of their immune system and older adults due to immunosenescence. Currently there are three vaccines available:

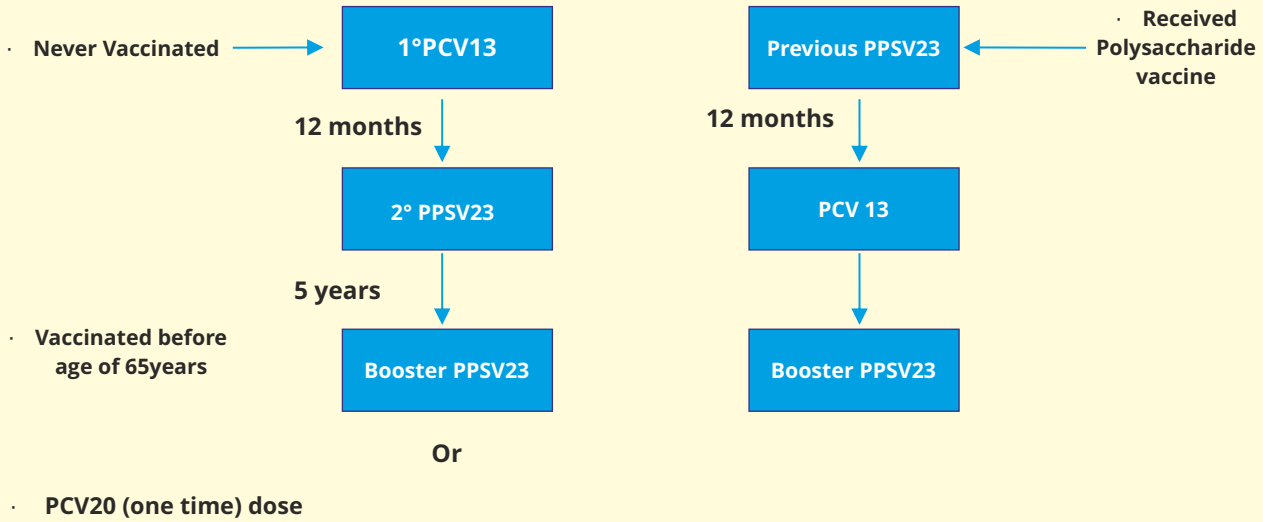
1. 13-valent conjugate vaccine in (PCV13).
2. 23-valent polysaccharide vaccine (PPSV23)
3. 20-valent conjugate vaccine (PCV20).

- All these three vaccines are composed of purified surface polysaccharides from different pneumococcal serotypes and the number in their name indicate the number of serotype they contain. The serotype contained in PCV13 and PPSV23 differ in their immunogenicity however, they are complementary in action.
- Sequential vaccination with both has been shown to be superior to the use of each vaccine separately.
- Preferably the vaccination for pneumococcal should start with PCV13 followed by PPSV23, after a gap of 12 months. Individual who have already received one or more doses of PPSV23, the schedule should be completed with PCV13 at least 12 months after the last dose administered. For individuals vaccinated due to risk factor or comorbidity a booster dose of PPSV23 should be administered after age of 65 years and when five or more years have elapsed since the last dose of vaccine. Those patients who are at very high risk for invasive pneumococcal disease such as heart transplant recipient, due to the lower immune response induced by the PPSV23 vaccine, should receive an additional dose of this vaccine.
- Pneumococcal 20 valent (Prevenar 20) conjugate vaccine protects against Cryptococcus pneumonia (Pneumococcus) infection specifically 20 different strains of bacteria that cause pneumonia and invasive pneumococcal diseases like meningitis or blood infections. This has been built on earlier 13 valent conjugate vaccine (PCV13) by adding 7 additional serotypes associated with severe and antibiotics resistant and more severe form of disease.

- Prevnar 20 is one time dose design to provide ongoing protection against pneumococcal disease.
- Pneumococcal vaccine can be administered simultaneously with influenza vaccine and any other vaccine recommended for individual.

Mild infectious condition do not represent a contraindication for vaccination and next the only contraindication for pneumococcal vaccine is a history of anaphylactic reaction.

PNEUMOCOCCAL VACCINE SCHEDULE FOR HIGH RISK INDIVIDUALS



C. HERPES ZOSTER (SHINGLES) VACCINE

- Herpes zoster is a neurocutaneous disease caused by the reactivation of the primary infection by the varicella-zoster virus (VZV). Chickenpox caused by varicella zoster virus is a highly prevalent condition worldwide and majority of the world population over the age of 50 has experienced at some point of time either symptomatically or asymptomatically this infection.
- Immunity against herpes zoster virus is acquired upon contacting infection and subsequent exposure maintain this immunity. However, immunity begins to decline with age due to immunosenescence, or when individual develop some other pathological condition or comorbidity which alter the immunity. The process of immunosenescence begins around the age of 50 and it progressively increases. Therefore, individual between the age of 50 and 90 can experience episode of herpes zoster.

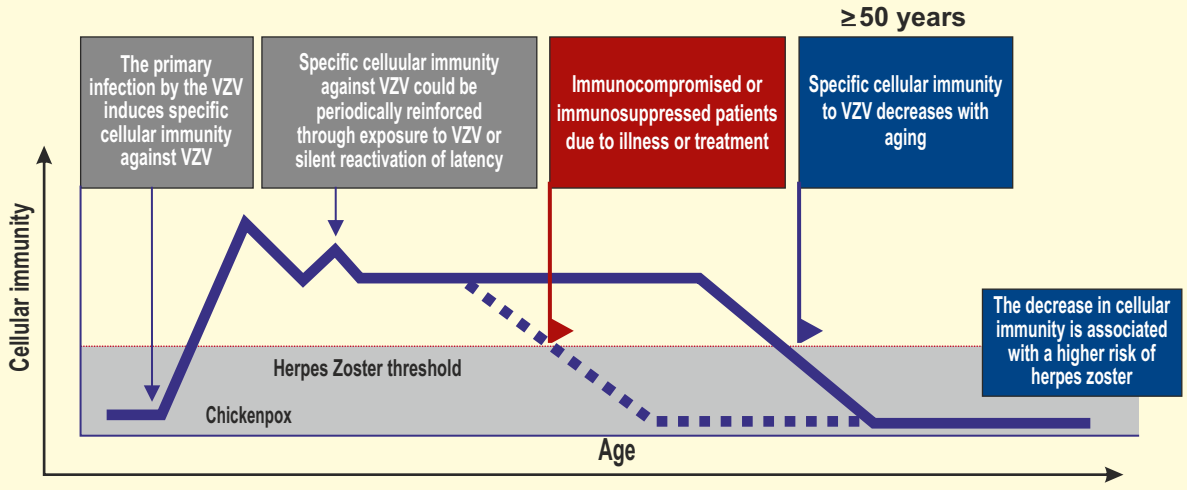


Figure 4. Schematic description of the acquisition of natural immunity against varicella-zoster virus (VZV), and the loss of this immunity with age or the presence comorbidities [Adapted from reference (33)].

- Besides causing herpes zoster and post herpetic neuralgia the herpes zoster virus has been linked with the increased incidence of cardiovascular and cerebrovascular events besides ophthalmic and neurological complications.
- Similar to other infections, VZV reactivates an inflammatory phenomenon which trigger endothelial dysfunction leading to the occurrence of cardio and cerebrovascular complication.
- Herpes zoster has been associated with increased risk of stroke during the first week post HZ and this risk gradually decreases in following week especially after the fourth week of initial event.
- Younger patient and those with ophthalmic herpes zoster have a higher risk of developing stroke.
- The risk of acute myocardial infarction is high during the first week following a herpes zoster infection and this risk gradually decreases over 4 to 6 weeks.
- In severe cases of herpes zoster there is increased risk of hospitalization due to heart failure.

VACCINE TO PREVENT HERPES ZOSTER.

- The vaccine recombinant HZ vaccine (Shingrix) contains an antigen and an adjuvant. This vaccine does not contain live attenuated virus and therefore it can be given to immunocompromised patients or any other comorbidities leading to severe immunosuppression.
- The recombinant vaccine has a very high efficacy in preventing the occurrence of herpes zoster in individuals over the age of 50 and above.
- Similarly, the efficacy in preventing post-herpetic neuralgia is also very high in all age groups above the age of 50.

Adverse reaction to the vaccine- The adverse event following this recombinant vaccine is usually very mild and self-limited. Usual adverse events are local pain, erythema, swelling at injection site. Systemic symptoms are slightly more frequently seen in younger patients in form of myalgia and fever. All these symptoms are transient and self-limited event.

Data from various registry have shown that vaccination with recombinant HZ vaccine reduces the risk of total stroke, ischemic stroke, hemorrhagic stroke and acute myocardial infarction and all cause mortality.

VACCINATION SCHEDULE.

- The recombinant vaccine is indicated for individual above age of 50 years and above regardless of the presence of comorbidities and for younger individual with the risk factor. The vaccinations, the first dose is to be given at the time of Consultation followed by a booster dose 2 to 6 month after the first dose. The vaccine is administered intramuscularly.

Table: Comorbidities and risk factors for herpes zoster reactivation in adults

Comorbidities
– Heart failure in functional class III-IV
– Pulmonary hypertension
– Diabetes
– Chronic obstructive pulmonary disease(COPD) and bronchial asthma
– Chronic kidney disease, especially patients on dialysis
– Cardiac transplantation
– Cancer patients
– Human immunodeficiency Virus (HIV)
– Other comorbidities: depression, chronic liver disease, alcoholism, connective tissue diseases, bone marrow or other organ transplantation.
Immunosuppression and biologic drugs
– Pharmacological: chronic use of corticosteroids, use of monoclonal antibodies, etc.
– Non-pharmacological: splenectomized patients.

- Serological testing for VZV is not needed prior to immunization.
- Vaccine can be administered simultaneously with influenza, conjugate and polysaccharide pneumococcal vaccine and COVID-19 vaccine.
- The only contraindication to the vaccine is hypersensitivity to any of its component.

– Dr. Vinod Sharma
Senior Consultant Cardiologist and VCEO, NHI

बाएं दाढ़ का दर्द

काशी हिन्दू विश्वविद्यालय के भारत कला भवन के संस्थापक और प्रसिद्ध कलाविद श्री राय कृष्णदास अक्सर कहा करते थे कि खराब दांत मुँह में विषधर सांप के समान होते हैं जो शरीर के समस्त तंत्रों को अपने विष (पूय) से चौबीसों घंटे दुष्प्रभावित करते रहते हैं। मसूढ़ों और दांतों से निरंतर रिस रहे विष (पस) का असर हृदय की रक्त वाहिकाओं पर भी पड़ता है और यह हृदयाघात का प्रमुख कारण बन सकता है ।

दांत का दर्द व्याकुल कर देने वाली पीड़ा के लिए इतिहास प्रसिद्ध है । यह बड़े बड़े दिग्गज शूरुमाओं को भी विचलित और बेसुध कर देती है । सुप्रसिद्ध फ्रेंच जनरल और योद्धा नेपोलियन बोनापार्ट ने अपनी आत्मकथा में दांत के दर्द का बड़ा जीवंत अनुभव लिखा है।उन्हें दांत के दर्द के कारण बहुत परेशानी होती थी । परीक्षा और युद्ध के मैदान में यह बहुत बड़ी समस्या बन कर खड़ी हो जाती थी । वाटरलू (June 18, 1815) के प्रसिद्ध युद्ध में उसे दांत के भयंकर दर्द से कराहना पड़ा था । इसी प्रकार अमेरिका के प्रथम राष्ट्रपति जार्ज वाशिंगटन जब अपने देश की स्वतंत्रता के लिए इंग्लैंड से निर्णायक युद्ध की तैय्यारी में नेतृत्व कर रहे थे तो उस रात उन्हें भयंकर दंत दर्द हुआ । एक तरफ जीने -मरने वाला आखिरी युद्ध दूसरी तरफ उनके दांतों में असहनीय दर्द । दंत चिकित्सक बुलाए गए । उन्होंने क्षति ग्रस्त दांतों की जगह बैल के दांत प्रत्यारोपित कर दिए । उसी पीड़ा और शल्य प्रक्रिया के बीच वाशिंगटन ने अंग्रेजों के विरुद्ध युद्ध लड़ा और विजयश्री प्राप्त की । अमेरिका स्वतंत्र देश हो गया । उनके विकृत दांत अभी भी अमरीकी संग्रहालय में यथावत सुरक्षित रखे हुए हैं।

ये दृष्टांत हमें यह बताते हैं कि हमें अपने दांतों को कितना सम्हाल कर रखना चाहिए । सामान्यतया हर व्यक्ति को युवावस्था में अक्ल दांत निकलने के समय जिन्हे लोक भाषा में दाढ़ निकलना भी कहा जाता है थोड़ा -बहुत दर्द होता है जो कुछ समय बाद स्वतः समाप्त हो जाता है । कभी कभी दंत चिकित्सक की मदद लेनी पड़ सकती है । परंतु ५५ -६० की उम्र के बाद यदि किसी को दाढ़ में दर्द होने लगे वह भी बाई ओर के दाढ़ में तो इस स्थति को गंभीरता से लेना चाहिए क्योंकि ऐसा दर्द हृदय की या किसी अन्य गंभीर बीमारी का द्योतक हो सकता है । एक ५५ वर्षीय प्रख्यात चिकित्सक को अचानक बाईं तरफ के दांत और कान में दर्द होने लगा । वेदना इतनी थी की उस दिन वह अपने चिकित्सालय भी नहीं गए अपने अन्य सहयोगी से अपने अंतर्गत भर्ती मरीजों को देखने का अनुरोध करके वह घर पर ही दर्द शामक दवाइयाँ खाकर आराम की आशा में रुक गए । दर्द बढ़ता गया और वह अचेत होकर कुर्सी पर लुढ़क गये । तब परिचारकों को स्थिति की गंभीरता का पता चला । पर तब तक बहुत देर हो चुकी थी । निकट के अस्पताल ले जाए गए पर वह तो निष्प्राण हो चुके थे । पुनर्जीवन के सभी प्रयास निष्फल सिद्ध हुए । बाद में पता चला की उन्हें लंबे समय से डायबिटीज थी । कोलेस्टेरॉल भी बढ़ा रहता था । उनके परिवार में तीन पीढ़ियों तक कोई भी व्यक्ति साठ पर नहीं कर सका था । इन सब चीजों को जानते हुए वह अपने स्वास्थ्य , वजन, कोलेस्टेरॉल ,शुगर और खान -पान का बहुत ध्यान रखते थे पर उन्हें यह कहाँ मालूम था की बाएं दाढ़ और कान दर्द के रूप में हृदयाघात (हार्ट अटैक) इस तरह से चोट करेगा और प्राण ले लेगा । ऐसे ही एक दूसरे प्रकरण में बड़े वरिष्ठ और लब्धप्रतिष्ठ सामुदायिक चिकित्सा के प्रोफेसर महोदय को सेवानृवृत्ति के बाद बाएं जबड़े और दांत में दर्द हुआ । सोचा दांत की कोई मामूली बात होगी । दंत चिकित्सक के पास गए । उन्होंने दांतों का एक्स -रे लिया तो पता चला कि उन्हें जबड़ों का कैंसर है जो दांतों को भी प्रभावित कर रहा है । जबड़ों और दांतों की विराट सर्जरी हुई । रेडियो चिकित्सा हुई । तबीयत में जब सुधार होने लगा तो घर चले गए । वहाँ थोड़े दिनों बाद उन्हे प्रबल हृदयाघात पड़ा और उनकी मृत्यु हो गई । चिकित्सक होने के बावजूद महोदय पिछले ३० वर्षों से लगातार गुटखा और शराब का सेवन करते थे । जिसके कारण उनके दांत और हृदय दोनों ही प्रभावित हो चुके थे । उन्होंने न तो अपने दांतों का परीक्षण कराया न ही अपने हृदय की सम्यक जांच -पड़ताल । इन्ही से मिलते जुलते एक और सज्जन हैं जिन्हें बाएं तरफ के निचले दांतों में दर्द हुआ । उन्होंने तुरंत जांच कराई तो पता चला की वहाँ पर गाँठनुमा कोई चीज विकसित हो रही है । तत्काल सर्जरी की गई और अब वह स्वस्थ सानंद हैं । कहने का आशय यह है की यदि किसी भी व्यक्ति को बाएं दाढ़ में / बाएं कान में दर्द हो तो तुरंत अपने चिकित्सक की सलाह लें । विशेषतः वे लोग जो सुर्ती, तंबाकू, सिगरेट – बीड़ी या शराब का सेवन करते हैं । बाएं तरफ के दांत के दर्द या कान के दर्द की कभी भी उपेक्षा न करें यह प्राणलेवा हो सकती है ।

– डा0 श्रीधर द्विवेदी,
वरिष्ठ हृदय रोग चिकित्सक, नेशनल हार्ट इंस्टीट्यूट

सुंदर मोती जैसे दांत,
उत्तम सेहत चमकत पांत,
जो नर इनको सेवत जांत,
तिन कर सेहत सुख करि खानि ।

A Second Chance: Rajesh's Journey to a Heart-Healthy Life

At 52, Rajesh had built a comfortable life — a stable job, a loving family, and the joy of weekend feasts. Fried snacks, butter-laden curries, and sweet desserts were part of every celebration. Exercise was an afterthought. Life was good — until one morning, it wasn't.

Rajesh woke up with chest discomfort and shortness of breath. A quick trip to the hospital revealed he had suffered a mild heart attack. That day became a turning point, not just for his health but for how he looked at food and life itself.

The First Lesson: Cutting Down on Fats

Sitting across from the dietitian, Rajesh learned that it wasn't just about avoiding oily food. It was about understanding fats. Saturated and trans fats, found in ghee-laden parathas and deep-fried samosas, had been slowly narrowing his arteries.

"Replace them with healthy fats," she said gently. "Use olive oil. Eat a few almonds. Add avocado to your toast."

Color on His Plate: Fruits and Vegetables

His next challenge was adding more greens and colors to his plate. Earlier, his plate was mostly brown — chapati, rice, and fried items. Now, it had become a canvas: spinach, tomatoes, bell peppers, oranges, and berries.

"Each color protects your heart in a different way," explained his daughter, who started helping him prepare meals.

The dietitian had told him, "Fruits and vegetables are packed with antioxidants and fiber. They lower blood pressure, help clean up cholesterol, and reduce the stress on your heart. The more variety in colors, the more diverse nutrients you're giving your body.

Whole Grains Over White Rice

One evening, Rajesh looked longingly at a bowl of white rice. But he reminded himself of the dietitian's advice.

"Switch to brown rice or millets. They're full of fiber and help reduce cholesterol."

He began enjoying oats in the morning, multigrain rotis for lunch, and quinoa khichdi for dinner. Over time, the cravings faded.

The dietitian had explained, "Whole grains release energy slowly, keeping your blood sugar stable. That's important because diabetes and heart disease often go hand-in-hand."

Sodium: The Silent Enemy

One of the biggest surprises for Rajesh was salt. He had never considered it dangerous. But high sodium was silently pushing up his blood pressure. Out went the pickles, papads, and packaged snacks. He began using herbs like coriander, mint, and lemon for flavor.

It took effort, but he adapted — and his blood pressure dropped.

Discovering Omega-3s

At a follow-up visit, his cardiologist mentioned omega-3 fatty acids.

"Try to eat fish twice a week — salmon or mackerel. They protect your heart."

Rajesh, a vegetarian, opted for flaxseeds, pumpkin seeds, walnuts, etc. instead. His breakfast smoothies soon had a nutty crunch.

"They help reduce triglycerides and prevent the blood from clotting too easily," the dietitian had told him. "That lowers the risk of future blockages. Even if you're not eating fish, plant-based omega-3s still make a big difference."

Small Plates, Smaller Portions

Another tip that changed his approach: portion control.

"It's not just what you eat, but how much," his dietitian reminded him.

He started eating slowly, savoring each bite, and found himself satisfied with smaller portions. Over time, he lost weight — and gained energy.

"Think of your stomach as your fist," she had explained. "It doesn't need more than that in one sitting. When you eat slowly, your brain has time to register that you're full. That alone can help with weight loss and blood pressure."

Saying Goodbye to Sugar

Giving up sweets wasn't easy. The festivals, the family gatherings — they all came with sugar. But now, he chose fruit chaat over gulab jamun, and dark chocolate over milk chocolate. "I'm sweet enough already," he joked with his wife.

"Sugar spikes your blood sugar and triglycerides," the dietitian had warned. "And that contributes to fat buildup in your arteries. You don't have to stop enjoying life, but you need to start making smarter swaps."

Heart disease may feel like the end of the road, but with the right diet and lifestyle, it can be a new beginning. Just like Rajesh, thousands can reclaim their health — one smart bite at a time.

Healthy eating works best when paired with regular physical activity and stress management practices like yoga or meditation. Psychology plays a vital role too — a positive mindset, stress control, and emotional balance encourage patients to stick to healthy habits and recover faster.

Caring for the heart, therefore, is not just about food — it is about the body, mind, and spirit working together.

– Ms Mansha Arora
Nutritionist & Psychologist
– Dr Karoon Agrawal
Consultant, Plastic Surgery
Dept of Plastic Surgery and Smile Train Centre, NHI

PICTURES SPEAK FOR THEMSELVES

ECHO APICAL 4C and CAG

A. Echo plax view
B. CAG – LMCA –LAD COURSE, NO LCX VISUALISED.

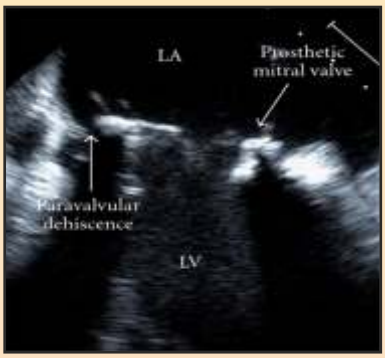
A, 55 year male patient came in OPD with history of angina on effort since 3 month, 5month duration of hypertension. There was no prior history of CAD.

Pulse rate 80bpm, BP 134/86 mmHg, ECG showed 1 mm ST depression in 2,3, avf leads, Patient was sent for assessment for LVEF and wall motion defect to echo room. Echo apical 4 chamber view showed a clear tubular structure above the mitral valve with no relation with coronary sinus. It was also seen in PLAX view too as bleb sign which was suggestive of anomalous origin of LCX coronary artery from RCA . This sign is called RAC sign –Retro aortic Anomalous Coronary).

His angiogram was done. It showed clear LCX origin from RCA (retro aortic course) with coronary occlusion in RCA and LCX and LMCA .

Courtesy: Dr. Uday Singh Yadav

Prosthetic mitral valve



TEE depicting paravalvular dehiscence and CXR showing florid pulmonary edema

Comparison of normal functioning mitral PHV

A, 34 years old female was admitted with acute onset breathlessness and orthopnea with recent history of mitral valve replacement and tricuspid valve ring annuloplasty (2 months back). Investigations revealed raised TLC and NT PRO BNP. CXR showed florid pulmonary edema. 2D-ECHO showed tilting of mitral PHV more towards IVS? PVL (? Detachment from annulus) with increased gradient of 55/30 mm Hg, mild MR, mild TR and fair LV Systolic function (EF-50%). Fluoroscopy showed rocking movement of mitral PHV s/o valvular dehiscence. TEE showed rocking movement of mitral PHV with mild paravalvular and intravalvular MR. 2mm vegetation around suture lines, soft tissue flap posteriorly with gradient 14/9 mm Hg suggesting Infective endocarditis with valve dehiscence.

Courtesy: Harsh Arora, Uday Singh Yadav, L.C. Gupta, S. Dwivedi

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