INSTITUTE OF PULMOCARE & RESEARCH

DG-8, Near Rabindra Tirtha, Action Area-I,
(On the way to New Town DPS School), New Town, Kolkata-700 156

WELCOME ALL FACULTY MEMBERS and DELEGATES to PULMOCON - '23

21st All India Update On Pulmonary Medicine

: CONTENT :

Pulmocon '23

Organized by Institute of Pulmocare & Research

Highlights of the Programme

Date : 7th & 8th October, 2023

Workshop:

- Sleep Medicine
- Small airway diseases

Symposium:

- Airway diseases
- ILD
- Allergy
- Pulmonary hypertension
- Occupational lung diseases
- Asthma

Case Presentation:

- Pleural diseases
- Eosinophilic lung disease
- Granulomatous lung disease
- Infections

COPD - multiple facet

Bronchiectasis

Hypersensitivlty pneumonitis: diagnosis and treatment

silicosis - diagnosis

Echo in COPD PH

HRCT

Adult vaccination

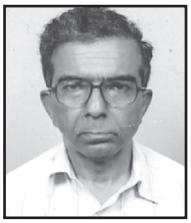
Pulmonary rehabilitation

Mucus management

National Pulmo Quiz

Poster & platform presentation

FROM THE PRESIDENT'S DESK



"Welcome to the 21st PULMOCON.

A scientific programme that stood the test of time proves two important points. Firstly, that there is a great deal of demand among the physician community and postgraduate students of good quality learning experience , and secondly the Institute of Pulmocare and Research has succeeded in maintaining a desired standard of scientific programme over these long years, not an easy task considering the circumstances we are living in.

I hope and pray for a successful PULMOCON 2023."

Dr. Dhiman Ganguly
President
Pulmocon - '23

FROM THE SECRETARY'S DESK

"On behalf of the organizing committee, it is my distinct pleasure to extend a warm and heartfelt welcome to all delegates of the "PULMOCON" 2023

This gathering marks a significant milestone in our collective pursuit of excellence in pulmonary medicine. It is a platform where leading minds from across the nation, including esteemed pulmonologists, researchers, healthcare professionals, and industry experts, come together to share knowledge, engage in discussions, and foster collaborations that will shape the future of respiratory healthcare

In a short span of 2 days, we will explore the latest advancements, breakthroughs, and best practices in pulmonary medicine. From cutting-edge research presentations to interactive workshops and thought-provoking panel discussions, this conference offers a comprehensive and diverse program designed to inspire, educate, and empower healthcare professionals and researchers.

I'd like to express my heartfelt gratitude to our speakers, sponsors, and exhibitors for their invaluable contributions in making this event possible. Your dedication to advancing the field of pulmonary medicine is truly commendable.

Finally, to our delegates, you are the heart and soul of this conference. Your passion, expertise, and commitment to improving respiratory health drive the success of this gathering. Your presence here reaffirms our shared dedication to bettering patient care and outcomes.

In conclusion, I welcome all of you and wish you all a productive, inspiring, and unforgettable experience at the National Pulmonary Conference 2023. May the discussions and connections you make here bring us closer to a future where every breath is a gift of good health.

Thank you for joining us on this journey. Let us embark on this exciting adventure together, breathing life into tomorrow."

Dr. Avishek Kar
Organising Secretary
Pulmocon - '23

FROM THE Jt. SECRETARY'S DESK

"It is a pleasure to welcome all the faculty and delegates to Pulmocon 2023. I hope that you will enjoy the program. Please excuse us for any shortcoming and feel free to give us your positive suggestion for any future event.

With regards and thanks."

Dr. Parthasarathi Bhattacharyya

Dr. Parthasarathi Bhattacharyya
Jt. Organising Secretary
Pulmocon - '23

PULMOCON - '23

Organizing President :

Dr. Dhiman Ganguly

Organizing Secretary :

Dr. Avishek Kar

Jt. Organizing Secretary :

Dr. Parthasarathi Bhattacharyya

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Ms. Sneha Biswas
Mr. Srijita Sen
Mr. Suman Pratihar
Mr. Tapas Kumar Basu
Mr. Viswanathan TD
Mr. Wrick Chakraborty

ডাঃ শম্ভুনাথ দে

জন্ম ঃ ১লা ফ্রেবুয়ারী, ১৯১৫ মৃত্যু ঃ ১৫ই এপ্রিল, ১৯৮৫

বাঙালি চিকিৎসক ও বৈজ্ঞানিক, যাঁর পরিচয় জাতির ইতিহাসে প্রায় বিলুপ্ত

স্যার আলেকজাণ্ডার ফ্লেমিং যেমন পেনিসিলিনের আবিষ্কর্তা, স্যার রোনাণ্ড রস্ যেমন ম্যালেরিয়ায় মশার ভূমিকার আবিষ্কারের জনক, তেমনি **ডাঃ শম্ভু নাথ দে কলেরার বিষ (toxin) এর আবিষ্কর্তা।**

সারা পৃথিবী যখন ফ্লেমিং, রস্ কে শ্রদ্ধা জানায় তখন নীরবে বৈপ্লবিক গবেষণা করা এই বাঙালী তথা ভারতীয় চিকিৎসক লোকচক্ষুর অন্তরালেই থেকে যান।

বিজ্ঞান গবেষণায় প্রেরণার অফুরন্ত উৎস হিসেবে আমরা আজ তাঁর মৃত্যুর ৩৮ তম বছরে তাঁকে নিবিড় ভাবে স্মরণ করি।

তাই ২০২২ সালে অনুষ্ঠিত আমাদের **পালমোকন - ইনস্টিটিউট অব্ পালমোকেয়ার অ্যাণ্ড রিসার্চ** এর বাৎসরিক বক্ষরোগ সংক্রান্ত সর্বভারতীয় সম্মেলনে আমরা প্রয়াত ডাঃ দে - কে আমাদের আন্তরিক শ্রদ্ধা জানানোর চেষ্টা করেছি। তাঁর নামে আমরা ২০০৯ সাল থেকে একটি বাৎসরিক স্মারক বক্তৃতার সূত্রপাত করেছি। এ বছর ঐ বক্তৃতা দিতে আসছেন ভারত বিখ্যাত বৈজ্ঞানিক ও চিকিৎসক অধ্যাপক ডাঃ অরুণালোক চক্রবর্ত্তী।

এক আত্মবিস্মৃত জাতির বর্তমান গ্লানিময় পরিস্থিতির প্রেক্ষাপটে ডাঃ শম্ভুনাথ দে-র উজ্জ্বল জীবনালেখ্য আমাদের চলার প্রেরণা ও পাথেয় হোক। চিকিৎসা বিজ্ঞানে বাঙালীর অবদান আমাদের ও পরবর্ত্তী প্রজন্মকে হারিয়ে যাওয়া সম্মান পুনঃ উদ্ধারে ব্রতী করুক। হীনমন্যতার মলিনতা থেকে বাংলার ও এদেশের চিকিৎসা ব্যবস্থা ঘুরে দাঁড়াক এক নতুন প্রত্যয়ের এবং একনিষ্ঠ প্রচেষ্টার আলোয়।

–ঃ জীবনী ঃ–

১৯১৫ সালে শম্ভুনাথ দে'র জন্ম হুগলীর এক সাধারণ ব্যবসায়ী পরিবারে। ছোটবেলা থেকেই তিনি মেধাবী ছাত্র হিসাবে চিহ্নিত হন - এবং ম্যাট্রিকুলেশনের পর প্রথমে হুগলীর মহসীন কলেজ ও পরে কোলকাতা মেডিকেল কলেজ থেকে ১৯৩৯ সালে MB এবং ১৯৪২ সালে DTM (Diploma in Tropical Medicine) পাস করেন। ১৯৪৭ সাল অবধি কোলকাতা মেডিকেল কলেজে প্যাথোলজি বিভাগে ডেমনস্ট্রেটর হিসাবে কাজ করার পর, তিনি লণ্ডনে ঞ্জস্ত্র করার উদ্দেশ্যে যান। ফিরে আসার পর তিনি কোলকাতা মেডিকেল কলেজের প্যাথোলজি বিভাগে যোগ দেন এবং মূলত কলেরা সংক্রান্ত গবেষণায় মনোনিবেশ করেন।

সে সময়ে কলেরা ছিল একটি মহামারী বিস্তার করা রোগ এবং কলেরা সম্মন্ধে মানুষের জ্ঞান ছিল সীমিত। ১৮৮২-৮৩ সালে রবাট কচ্ (Robert Koch) কলেরার জীবানু আবিষ্কার করেন কিন্তু ঠিক কিভাবে কলেরা হয় তা একটা বিরাট প্রশ্নচিহ্নের মত থেকে যায় – কারন, রবার্ট কক্ এবং তৎপরবর্তী অন্যান্য বৈজ্ঞানিকরা এই রহস্য উদ্‌ঘাটনে ব্যর্থ হন। সাধারণ ব্যাকটেরিয়ারা যে ভাবে মানুষকে আক্রান্ত করে, ঠিক সেই হিসাবে কলেরার আক্রমণ ও রোগ সৃষ্টিকে তারা বুঝতে ও বোঝাতে পারেননি। আসলে কলেরার জীবাণু (vibrio cholerae) রোগ সৃষ্টি করে সম্পূর্ন অন্য উপায়ে - জীবানু নিঃসৃত Toxin বা বিষ অন্ত্রের উপর কাজ করে দাহ্য ঘটায়। অন্ত্রের (ইলিয়াম) এর লুপ মডেলের ব্যবহার করে ডাঃ দে দেখান যে কলেরা হয় ঐ বিষ বা Toxin এর জন্য। জীবানু ও তার দেহ নিঃসৃত বিষ যে এভাবে অসুখ সৃষ্টি করতে পারে এ তথ্য প্রতিষ্ঠার জনক হন **ডাঃ শম্ভুনাথ দে**। ১৯৫৯ সালে এই আবিষ্কারের পর, ১৯৬১ সালে তিনি London বিশ্ববিদ্যালয়ের D.Sc. (শরীর বিদ্যা) হন।

পরবর্তী কালে ডাঃ দে নীলরতন সরকার মেডিকেল কলেজ ও বসু বিজ্ঞান মন্দিরেও কাজ করেন। প্রভূত প্রতিকূলতার মধ্যে তাকে কাজ করতে হয়। তাঁর কাজে সাহায্য করা দূরে থাক, পদে পদে তাঁকে হেনস্থা হতে হয়। এক সময় হতাশ হয়ে এবং একরকম বাধ্য হয়ে তিনি গবেষণার কাজ বন্ধ করে দেন। একটা ছোট প্যাথলজি ল্যাবরেটরী করে এই মহান বৈজ্ঞানিককে দিন যাপন করতে হত। **জীবদ্দশায় তাঁর ভাগ্যে কোন সম্মান জোটেনি; 'মহান' এই দেশ তাঁকে কোথাও কোন রকম স্বীকৃতি দেয় নি।**

ডাঃ দের গবেষণার ফলশ্রুতিতে আরও অনেক আবিষ্কার যেমন দাস্থ তে ORS চিকিৎসা, কলেরা-টীকা সমস্তই সম্ভব হয়েছে তার আবিষ্কারের সৌজন্যে। **একাধিক বার তিনি বিদেশ থেকে নোবেল পুরষ্কারের জন্য মনোনীত হন, ১৯৭৮ সালে - তিনি নোবেল কমিটিতে বক্তব্য রাখেন।**

মহান এই বৈজ্ঞানিক **১৯৮৫ সালে লোকান্তরিত হন**। যদিও জীবদ্দশায় তিনি তার নিজের দেশে কোন সম্মান ও স্বীকৃতি পাননি, আমেরিকার ও দেশ বিদেশের গবেষকরা কিন্তু ডাঃ শম্ভুনাথ দে কে দুহাতে সম্মান সূচক অর্ঘ সাজিয়ে দিয়েছেন। তার নামে লেখা অনেক প্রবন্ধ, ছাপা হয়েছে বিদেশী বৈজ্ঞানিক পত্র-পত্রিকায়। যদিও তার মৃত্যুর দশ বছর পর **১৯৯৪ সালে কোলকাতা বিশ্ববিদ্যালয় তাঁকে সম্মানীয় D.Sc. উপাধি দেন।**

ডাঃ দের মৃত্যুর ৩৮ বছর পরে তাঁকে সম্মান জানাতে পেরে আমরা নিজেদের কৃতার্থ বলে মনে করছি। আমাদের এই ছোট্ট প্রতিষ্ঠান এই সম্মান প্রদর্শনের মধ্য দিয়ে গভীর ভাবে প্রেরণা অনুভব করছে।

হয়ত বহুশ্রুত নাটকের এই উক্তিই সত্যি - ''সত্য সেলুকাস্, কি বিচিত্র এই দেশ !''। জাত-পাত, ধর্ম-গোষ্ঠী, রাজনীতির সদা সংকীর্নতা, মানসিক ও আত্মিক দীনতার, আত্মবিশ্বাস হীনতার অন্ধকারে এমনি হারিয়ে যান কত জ্যোতিষ্ক। মৃত্যুর ৩৮ বছর পরও আমরা তাকে কোন মরনোত্তর সম্মান দিতে পারিনি – রাজপথ দূরে থাক, একটা কানা গলি, কি একটা শিক্ষা প্রতিষ্ঠানে কোথাও তাঁর নাম নেই।

আমরা আশা করবো ডাঃ শম্ভুনাথ দে কে আমাদের সমাজ ও সরকার উপযুক্ত মূল্যায়ন করবেন এবং তার মাধ্যমে বাংলা তথা ভারতবর্ষের চিকিৎসা জগৎ - এ গভীর ও সুস্থায়ী পরিবর্তনের সূচনা হবে।

Dr. Sambhu Nath De

Born : 1st February, 1915 **Passed away : 15th April, 1985**

A great doctor and scientist from Bengal – who is forgotten in our national history.

Dr. Sambhu Nath De can be placed in the same row with Dr. Alexzander Flamings (the inventor of penicillin) and Sir Ronald Ross (the inventor of the role of mosquito in malaria). Dr. De discovered that toxin secreted from the cholera germ causes loose motion and this fact changed the face of treatment of diarrhoeal disease altogether and helped to same millions of lives. But Dr. De remains in oblivion when the world pays tribute to the other two and many more.

We wished to bring his name to light in his birth Centenary and after 38 years of his passing away. So, we initiated a memorial oration in his name in our annual update from 'Pulmocon 2009' onward. This year, Prof. Dr. Arunaloke Chakrabarti will deliver the oration.

Let the life and work of Dr. Sambhu Nath De inspire us and make us stride to bring glory and confidence to our efforts in healthcare and research.

ABOUT DR. SAMBHUNATH DE

EARLY CAREER

Sambhu Nath De was born in Hooghly District, West Bengal, India. His father Mr Dasarathi De was a small businessman. Supported by his uncle Asutosh De, De completed the Matriculation examination with distinction that helped him to get the District scholarship as well as to pursue further education in Hooghly Mohsin College. De passed his M.B. examination in 1939 from Calcutta Medical College and completed a Diploma in Tropical Medicine (DTM) in 1942. Soon after graduation he joined Calcutta Medical College as a Demonstrator of Pathology. In 1947, De joined as a Ph.D. student under Sir Roy Cameron at the Department of Morbid Anatomy, University College Hospital Medical School, London, and obtained his Ph.D. degree in Pathology in 1949. After his return, De worked on pathogenesis of cholera and started publishing his findings. In 1955, De became the Head of Pathology and Bacteriology Division of the Calcutta Medical College, which he continued until his retirement.

CONTRIBUTIONS

De made significant contributions to our recent understanding of cholera and related diarrheal diseases. Followed by the discovery of Vibrio cholerae in 1884 by Robert Koch, many works have been carried out all over the world to answer many questions related with its pathogenesis and mode of transmission in causing outbreaks. Three of his works viz., ligated intestinal loop method for studying cholera in rabbit model; ileal loop model to demonstrate the association of some strains of E. coli with diarrhea and lastly but most importantly is his discovery of cholera toxin in 1959 in the cell-free culture filtrate of V. cholerae that stimulated a specific cellular response.

In 1959 De was the first to demonstrate that cholera bacteria secrete enterotoxin. This discovery eventually promoted research to find a treatment aimed directly at neutralizing the cholera enterotoxin. De's paper "Enterotoxicity of bacteria-free culture-filtrate of Vibrio cholerae," while initially unrecognized, today is considered a milestone in the history of cholera research. Biochemist W.E. van Heyningen, professor emeritus, University of Oxford, UK, and John R. Seal, former scientific director, National Institute of Allergy and Infectious Diseases, Bethesda, note that De's paper "deserves to go down as a classic in the history of cholera, and, indeed, as later developments have shown, in the history of cellular physiology and biochemistry."

"An experimental study of the mechanism of action of Vibrio cholerae on the intestinal mucous membrane" is De's most-cited paper, cited 340 times until August 1986. De's most-cited paper has been core to cholera research fronts for many years, especially research fronts on "E. coli and Vibrio cholerae enterotoxin: detection, characterization, and role of adherence" and "Characterization of cholera enterotoxin and other enterotoxins". As noted by John Craig, State University of New York Health Science Center at Brooklyn, De's work was truly creative and novel, and it "forever altered our concepts surrounding the pathogenesis of secretory diarrhoea."

These famous findings came out from the work he carried out at the Nilratan Sircar Medical College, Calcutta Medical College and Bose Institute, Kolkata in extremely modest laboratory settings. Using research methodology that was very simple, easy to perform and inexpensive, he set the highest standards of excellence in novel experimental design and execution.

The oral rehydration therapy (ORT) for replenishing the massive fluid loss in cholera patients, has saved innumerable lives, should be considered as a direct outcome of De's discovery of cholera toxin. His findings on exotoxins set the stage for the modern views of diseases caused by toxin producing bacteria, helped in the purification of cholera and heat-labile (LT) enterotoxins produced by V. cholerae and E. coli, respectively, and in the development of series of cholera and enterotoxigenic E. coli (in short ETEC strains) vaccines.

POST-RETIREMENT

De retired in 1973 from the Calcutta Medical College at the age of 58. After his retirement, he showed no interest in higher positions but continued his research at the Bose Institute, Calcutta. De's desire to purify the cholera toxin did not progress any further as the protein purification technology was not well established in his research settings. In 1978, the Nobel Foundation invited De to participate in the 43rd Nobel Symposium on Cholera and Related Diarrhoeas.

De died on April 15, 1985 at the age of 70. His life's ambition was to make the world a better place to live in through his dedicated selfless services in medical science.

Nobel laureate Prof. Joshua Lederberg had nominated De for the Nobel Prize more than once. Said Lederberg, **"our appreciation of De must then extend beyond the humanitarian consequences of his discovery. . . he is also an examplar and inspiration for a boldness of challenge to the established wisdom, a style of thought that should be more aggressively taught by example as well as precept."**

And yet De was never elected a fellow of any Indian academy and never received any major award. Indeed as Professor Padmanabhan Balaram pointed out in an editorial in Current Science, "De died in 1985 unhonoured and unsung in India's scientific circles. That De received no major award in India during his lifetime and our Academies did not see it fit to elect him to their Fellowships must rank as one of the most glaring omissions of our time. De's heroic story of persistence, dedication and achievement should serve as an inspiration to the many who are increasingly bewildered by the current fashion of mega projects, surrounded by fanfare and publicity and most often surprisingly little discernible scientific output."

Retrieved from "http://en.wikipedia.org/wiki/Sambhu_Nath_De"

A TRIBUTE TO THE MEMORY OF DR. SAMBHUNATH DE

Prof. A. K. Nandy

Dr. Sambhunath De worked and died in this city of Calcutta (now Kolkata), and it was in this city that he discovered the Cholera Enterotoxin - fifty years back in 1959, which as Prof. Van Heyningan of the University of Oxford, noted "deserves to go down as a classic in the history of cholera and, indeed as later developments have shown, in the history of cellular physiology and biochemistry".

This great scientist, though recognised internationally, and by the Nobel Commitee itself for his great work, remained almost unknown and neglected in his own country, in his own State, and even the city he worked in. No wonder then, when Professor P. Balaram in an Editorial in the 'Current Science' journal, wrote "De died in 1985 unhonoured and unsung in India's scientific circles", ... must rank as one of the most glaring omissions of our time. De emerges in retrospect as a moment self-effacing scientist driven by inner compulsions to grapple with a major scientific problem of the time. "De's heroic story of persistence, dedication and achievements should serve as an inspiration to many who are increasingly bewildered by the current fashion of megaprojects - surrounded by fanfare and publicity and most often, surprisingly little discernible scientific output".

Research work of Dr. S. N. De

His work on cholera started when he was the Professor of Pathology in N.R.S. Medical College. His paper published during this period in 1953 has been his most cited paper, cited 340 times until August 1986 and has been designated as a 'Citation Classic' in 1987, indeed a very rare recognition. He continued his work in Calcutta Medical College where he joined as the Director-Professor of Pathology in 1956 and also as a 'Honorary Worker' in the Bose Institute. His work started getting keen attention from the international scientific community, as was exemplified from the words of Dr. John Craig of the State University of New York : "De's work was truly creative and novel, and forever altered our concepts surrounding the pathogenesis of secretory diarrhoea".

By 1960, De established the existence of "CHOLERA EXOTOXIN". In his own words "Vibrio Cholerae has now been promoted to the rank of few exotoxin-producing bacteria. Diphtheria exotoxin was discovered within 4 years of discovery of the bacillus, Tetanus exotoxin within 6 years. It has taken 75 years for cholera exotoxin to be discovered in 1959, after organism was discovered by Robert Koch in 1884" (B.C.Roy Oration).

De wanted to continue with his research for further purification of the toxin ultimately develop that he discovered, and ultimately develop a vaccine against cholera. But, unfortunately various constrains and lack of support for necessary facilities forced him to limit himself. He stated - "by 1963-64, I was forced to discontinue my work and lost all interest in cholera" (B.C.Roy Oration).

But his unfinished work was picked up by scientists abroad in few years' time, when they noted its implications. Extensive work was started on the foundation laid by De; its wider applications in a variety of investigations were also worked out in the proceding years. Applause started reaching him from all corners of the world except his own country. Noble Laureate Professor Joshua Lederberg noted, " ... his findings on exotoxins set the stage for modern views of diseases caused by the toxin-producing bacteria, ... helped in purification of the cholera and E.Coli enterotoxins, ... and in the development of cholera and E.Coli vaccines". He had nominated De for the Nobel Prize more than once.

The Nobel Foundation invited De in 1978 to participate in the 43rd Noble Symposium on "Cholera and Related Diarrhoes". He was highly applauded there by all present there (see letter). Noble Prize seened to be a possibility. But Lady Luck disappointed hid this time also.

He died a brooken-hearted man on April 15, 1985 from Hepatitis-B infection followed by hepatic coma.

The Indian scientific community woke up from its 'Kumbha-Karna Sleep' at long last "Current Science", the pioneer Indian scientific journal brought out a "Special issue on S.N.De and cholera Enterotoxin" in 1990 with contributors from all over the world. This was for the first time the prestigeous journal brought out a special issue on a particular scientist.

PULMOCON '23

7th and 8th October 2023
Venue : CII-Suresh Neotia Centre, City Centre, Sector-I, Salt Lake, Kolkata-64
Organised by : Institute of Pulmocare & Research, Kolkata.

Acharya Prafulla Chandra Roy Memorial Award, 2023

Bengal has given birth to many great people – Acharya Prafulla Chandra Roy had been one amongst them.

Acharya P C Roy dreamt of self reliance and promotion of self sufficiency in all fields through research and innovations. The great scientist was a great entrepreneur too. He established Bengal Chemical, the 1st Indian entrepreneurship in Chemical and Pharmaceutical industry over 123 years ago (on 12-04-1901). That was, infact, the beginning of the pharmaceuticals industry in India.

The beauty of his personality was in simple living but in extraordinarily high thinking, in noble ambitions and the ability to withstand odds. They were admixed with a generosity with extreme love and affection for his students and the countrymen and sense of discipline. A story goes as that once he was very angry with a student who spent one penny extra for his professors tiffin but on the same day of the incidence, the apparently miger professor donated ` 50,000/- to the National Congress Party for draught-relief in North.

To commemorate him and to instill the sprit of innovations amongst ourselves we have incorporated an award in our annual Pulmocon from the year, 2009. The 1st Acharya P C Roy memorial award was offered to Dr. Sujay Guha and the next was confered to famous scientist and innovator Dr. Tinku Acharyya who innovated the digital photography technology. In 2011 we had felicitated Prof. Indu Bhusan Chatterjee for his distinguished contribution in research and innovations in 2012, similarly, in subsequent years doyens in research and innovations have been conferred with this award. In Pulmocon 2023 we are happy to award Dr. Samiran Panda.

The Orator of Prof. S. N. De Memorial Oration

Prof. Dr. Arunaloke Chakrabarti

Born in West Bengal, India, Dr. Arunaloke Chakrabarti started his medical career from Calcutta Medical College and went on to pursue his post-graduate degree in microbiology from the Postgraduate Institute of Medical Education and Research, Chandigarh, India. He joined the faculty at the Postgraduate Institute of Medical Education and Research in 1988 and has been a full professor in the department since 2005. He is currently the Director of Doodhbari Burfani hospital and research centre in Haridwar from January,2021.

He underwent additional training in North Middlesex Hospital, London,Public Health Laboratories, Colindale and North Manchester General Hospital, Manchester and also received WHO Research Training Grant at Centers for Disease Control, Atlanta, USA.

His sustained efforts at diagnostic and research excellence in fungal infections made his laboratory known as one of the best diagnostic mycology centers in South-East Asia, recognized as "Center of Advanced Research in Medical Mycology" and "National Reference Laboratory in Medical Mycology". WHO has recognised his center as "WHO Collaborating Center for Reference and Research on Fungi of Medical Importance." He initiated the "National Culture Collection of Pathogenic Fungi" and 'Nodal Centre for Antifungal Resistance Surveillance' in India.

In a career involving 41 years of research experience he has extensively contributed in broadening our horizon of knowledge in fungal rhinosinusitis, cryptococcosis, sporotrichosis, identification of peniciliosis marneffei, mucormycosis, epidemiology of candida auris pandemic, aspergillus flavus, outbreaks due to common and unusual fungi, pathogenesis of chronic dermatophytosis and completed a nationwide surveillance of ICU acquired candidemia. His major contribution is in the field of epidemiology of fungal sinusitis, mucormycosis, and hospital acquired fungal infections. His laboratory

identified the endemic regions of fungal sinusitis, sporotrichosis, penicilliosis, source of Cryptococcus gattii in India, emergence of Apophysomyces elegans in tropical countries. His laboratory investigated many nosocomial fungal outbreaks in developing countries, and developed molecular identification and typing methods of zygomycetes.

Under his able guidance many budding scientists and researchers have completed their thesis. To his credit he has published 56 postgraduate and PhD thesis till date.

He has published 487 papers in the field of Medical Mycology in international and national journals and delivered lectures in >100 medical conferences and societies. He is the editor of two books namely- Fungal Infections in Asia – The Eastern Frontier of Mycology, Elsevier, 2013 and Clinical Practice of Medical Mycology in Asia, Springer 2020.

He has written 21 chapters in international and national textbooks relating to medical microbiology.

3 recently discovered fungi were named after him honoring his contribution to medical mycology i.e., Malassezia arunalokei, Cunninghamella arunalokei and Exophiala arunalokei

His leadership extends to national and international mycology societies. He is the Past-President of International Society for Human and Animal Mycology(2018-2022), Chair, Asian Fungal Network under International Society for Human and Animal Mycology (ISHAM) since 2012, Chair, Fungal Infections Study Forum since 2012, has been member of WHO's expert group on priority fungal pathogens in 2020,

Is a Coordinator to conduct global surveillance of antimicrobial resistance in fungi under Global Antimicrobial Resistance Surveillance System (GLASS) of World Health Organization, Geneva, Switzerland since 2018, Member of Scientific Advisory Committee of 'National Centre for Microbial Resource' (DBT centre) at Pune since 2017,Chairman of Institutional Ethics Committee of Institute of Microbial Technology, Chandigarh (a CSIR Institute) since 2017. He is Coordinator of the ISHAM working groups on 'Fungal sinusitis' and 'ABPA in asthmatics', and member of two more ISHAM working groups. International Society of Human & Animal Mycology has recognized him as 'Global opinion leader in the field of medical mycology'.

He is Editor/Associate Editor/Section Editor/Deputy Editor of six international journals - Medical Mycology(2006-18),Medical Mycology Case Reports(since 2012), 'Society for Indian Human and Animal-Mycologists'(2000-2012), Mycopathologia(2005-2012) ,Current Fungal Infection Reports(since-2014), Journal of Medical Microbiology(since 2006), Mycoses(since 2012). He is Editorial Board member

of Indian Journal of Medical Microbiology, Elsevier Clinical Advisory Board (2011- continuing), 'Journal of Infection in Developing Countries' (2009-continuing), Bulletin of Haffkin Institute' (2011-continuing). He is Reviewer of International journals 'Clinical Infectious Diseases', 'Journal of Clinical Microbiology', 'Medical Mycology', 'Mycoses' and of several National Journals like 'Indian Journal of Medical Research', 'Neurology India', 'Indian Journal of Pathologists & Microbiologists' etc.

For capacity building in the field of fungal infections, he has conducted 24 National training courses on 'Diagnostic Medical Mycology – conventional and Molecular techniques' over last eleven years as 'Chief resource person', conducted 10 Medical Mycology Training Network (at Nanchang, China, Hanoi and Hochi Minh City, Vietnam, Kuala Lumpur, Malaysia; Bangkok, Thailand; Cebu, Philippines, Penang, Malaysia,Phuket, Thailand, Singapore, Taipei, Taiwan – Faculty Medical Mycology Training Network. He has also conducted WHO courses in Medical Mycology at Myanmar, Thailand, Nepal, and hospital staff of Bhutan.

He is also involved in mentoring the development of mycology reference centers across India, supported by the Indian Council of Medical Research.

He received multiple awards from National Societies, Academies of India, and was awarded the Fellow of National Academy of Medical Sciences and Fellow of The National Academy of Sciences, India. He received three awards from Indian Association of Medical Microbiologists - S C Agarwal Award, IAMM Endowment Award, Pankajalakshmi Venugopal award in mycology. He delivered multiple orations in different national bodies including 'P C Mahanta oration' in Guwahati, Dr. Pran Nath Chhuttani Oration for the year 2009-2010 from National Academy of Medical Sciences (India) in recognition of outstanding contribution in the field of Medical Mycology, 11th Major General Sir Sahib Singh Sokhey Memorial Oration Award 2011 (Indian national who has made outstanding contributions by way of scientific research in the field of experimental biology or medical sciences) at Haffkine Institute, Bombay, Presidential oration of Society for Indian Human and Animal Mycologists, 2012, Presidential oration of Indian Association of Medical Microbiologists, 2012, B C Guha Memorial Lecture Award for Indian Science Congress. 2016, Dr. B.K Das oration of Odisha Chapter, Indian Association of Medical Microbiologist, 2016. He received the "Haripada Kundarani Memorial Award" for Life Time Excellence in Professional Service, 2019-2020 from Medical College, Calcutta. Recently Prof. Arunaloke Chakrabarti received 2022 ASM Moselio Schaechter Award by the American Society for Microbiology (ASM) for exemplary leadership and commitment towards the substantial furthering the microbiology profession in research, education and technology in the developing world.

Dr. Samiran Panda

Dr AS Paintal Distinguished Scientist Chair
Indian Council of Medical Research (ICMR)
&
Editor-In-Chief
The Indian Journal of Medical Research
Ansari Nagar, New Delhi - 110029

Dr Panda's Journey in the world of medical research started in 1991 when he joined the National Institute of Cholera and Enteric Diseases (NICED) in Kolkata. It is one of the 27 institutes spread across India under the Indian Council of Medical Research (ICMR). What influenced him to pursue such a path – in his own words - was his interest in understanding 'things' better and to solve puzzles. Reading detective stories was a hobby that he pursued throughout his school days; most of the time in the attic of the house he lived in the suburb of Kolkata. Although, in these quiet corners, he lived in hope to succeed at least once to identify the criminals in those stories before the protagonist sleuth did it – he never succeeded.

Joining ICMR-NICED in the early '90s came with a caveat. The appointment required him to travel to the northeastern States of India bordering Myanmar and get stationed in Imphal, the capital city of Manipur where NICED had a Unit for research on HIV/AIDS in the northeastern States of India. Samiran decided to travel in the real world and try his luck in solving puzzles that continued for years. Presently he holds the position of Distinguished Scientist of ICMR, New Delhi (Dr AS Paintal Chair). Earlier he became the Additional Director General of ICMR after heading the Division of Epidemiology & Communicable Diseases of ICMR. Prior to this responsibility, Dr Panda served as the Director of the ICMR-National AIDS Research Institute located in Pune, Maharashtra. His stints with various ICMR institutes are characterized by several noteworthy investigations of immense public health importance such as identification of the satellite epidemic of herpes zoster in Imphal, Manipur following explosive HIV epidemic among injecting heroin users in the State, HIV & HSV-2 studies in Chennai, Tamilnadu, dual epidemic of HIV & HCV in Punjab, diarrheal disease outbreak following tropical cyclone in East-Medinipur, West Bengal, high infant death in the southernmost district of Saiha, Mizoram, rotavirus incidence study in rural West Bengal and HIV & HCV outbreak in Unnao, Uttar Pradesh. Synthesizing evidence to inform policy and public health program have, all along, been his forte. The COVID-19 responses in India during 2020-2022 witnessed his remarkable role as a researcher and frontline public health leader.

Dr Samiran Panda, an alumnus of the Calcutta National Medical College, School of Tropical Medicine, Kolkata, Christian Medical College, Vellore and the University of California, Los Angeles, carries with him a rich experience of research, evaluation and intervention development. He worked as a short-term consultant for the World Health Organization (WHO) in delivery of anti-retroviral therapy for People who Inject Drugs (PWID) and their partners in resource poor settings. Furthermore, he played a key role in supporting bi-lateral and multi-lateral development partners in designing and implementing evidence-based interventions with active involvement of key population groups in countries like Bangladesh, Myanmar, Nepal, and China. In recognition of his expertise, UNESCO headquarter in Paris assigned him with the responsibility of conducting evaluation of intervention program for marginalized youths in the Caribbean Islands, Cambodia and India.

A recipient of the ICMR Award in 1995 for commendable research in the field of Communicable Diseases, Dr Samiran Panda was awarded Fogarty International Fellowship for the period 1995-1996. Among many other recognitions, he was invited to deliver prestigious lectures such as Ronald Ross Oration 2022 in the month of March at the Institute of Postgraduate Medical Education & Research (IPGMER) Kolkata and Dr. John Everette Park Memorial Oration at the 66th Annual Indian Public Health Association Conference held in September, 2022, in Pune, Maharashtra. He was elected as a Fellow of the West Bengal Academy of Science & Technology (WAST) in the year 2020.

Dr Panda has published several seminal journal articles and book chapters. At the behest of UNODC-Regional Office for South Asia (UNODC ROSA), he authored monographs and training modules that are extensively drawn upon. His contribution in one of the most successful harm reduction projects in developing country setting, namely the CARE funded SHAKTI project in Bangladesh, and the field study in Chennai, Tamilnadu with research grants from the Population Council and the European Commission speak about his commitments around containment of HIV epidemic in India and the sub-continent. Helping formation of the Society for Positive Atmosphere and Related Support to HIV/AIDS (SPARSHA) and generating a model of reduction of stigma and discrimination (finding its place in the World Bank compilation), evidence synthesis for incorporation of rotavirus vaccine in the national universal immunization program and examining the relevance of using cholera vaccine in today's India are great testimonies of his efforts towards translating research into action.

Presently, Dr Samiran Panda spends most of his time by serving as the Editor-In-Chief of the Indian Journal of Medical Research (IJMR), mentoring young researchers and pursuing completion and writing up of results of the research projects he is involved in. He has also gone back to his huge collection of books, which were left alone on the shelves and gathered dust in Kolkata, while he was entrusted by ICMR with the responsibility of spearheading research responses to tame the waves of COVID-pandemic in the country.

PULMOCON - 2023

21st All India Update in Pulmonary Medicine,

7th and 8th of October 2023.

Venue : CII Suresh Neotia Centre, Saltlake, Kolkata.

Organised by : Institute of Pulmocare & Research, Kolkata.

PROGRAM SCHEDULE

Time	Program	Speaker	Chairperson
Day 1: **07-10-2023(Hall A)**			
10:00 – 10:02	*Welcome address*		
10:02 – 11:33 (90 mins)	Symposium: **Airway diseases** ❑ Treating asthma in adults – where do we stand ❑ Neutrophilic asthma: clinical and inflammatory characteristics with management approach ❑ Unclassified OADs – a glimpse at the problems ❑ Treatment of OAD beyond bronchodilators and ICS: role and room for biologics. Q + A&Panel ***Tea at hall***	Dr Supriya Sarkar Dr. Angira Dasgupta Dr AvyaBansal and Srijita Sen Dr. Deepak Talwar	**Coordinator:** Dr. Sumit Sengupta **Expert panellist:** Dr. Ajoy Sarkar Dr. Sumit Roy Tapadar
11:35 – 01:00 (85 mins)	*Inauguration, APC Roy Award and Dr. S N De Memorial Oration:* **Pulmonary mycosis is chameleon - difficult to diagnose**	Dr. Samiran Panda Dr. Arunaloke Chakrabarti	Dr. Deepak Talwar Dr. Dhiman Ganguly Dr. Parthasarathi Bhattacharyya
01:00 – 02:00 (60 mins)	***Lunch***		
02:00 – 02:30 (30 mins)	**Case-based learning:** Chronic indolent lung infections	Dr. Kanishka Kumar with Dr Deepak Talwar	Dr. Arunaloke Chakrabarti Dr. M L Gupta Dr. Ajoy Sarkay
02:30 – 04:00 (90 mins)	Symposium: **ILD** ❑ What have we learned in last two decades? ❑ HRCT in DPLD: algorithmic approach ❑ CTD – ILD evaluation – the science and the art ❑ Treatment options – immunosuppressant Vs antifibrotics ❑ Case presentation Q + A& Panel	Dr. Milind Baldi Dr. Parthasarathi Bhattacharyya Dr. Shounak Ghosh Dr Sourin Bhuniya	**Coordinator:**Dr Sivaresmi Unnithan **Expert panellist:** Dr. Ankan Banerjee Dr. Saibal Ghosh Dr. S K Pathak
04:00 – 04:10 (10 mins)	***Tea break***		
04:10 – 06:10 (120 mins)	Workshop: **Small airway diseases** ❑ Small airways: structure and functional importance ❑ Detection and measurement of small airway dysfunction ❑ Radiological detection of small airway disease ❑ Small airway dysfunction in OAD (Obstructive airway disease) ❑ Small airway dysfunction in obstructive airway diseases : experience of IPCR ❑ Small airway dysfunction in restrictive lung diseases ❑ Airway involvement in interstitial lung diseases ❑ Impact and importance of small airway disease and treatment (Gr discussion with all faculties and Dr. Arindam Mukherjee) Q + A ------ Example of interaction – one or two real cases with investigation, reports may be placed for interactions(Spirometry, DLCO, FOT)	Dr Sudip Ghosh Dr Sudip Ghosh Dr Sumit Sharma Dr Saibal Moitra Ms Debkanya Dey Dr Sumit Sengupta Ms Sayanti Karmakar Dr Arindam Mukherjee	**Coordinator:** Dr. Saibal Moitra
Poster presentation – 11 am and 3 pm (will be declare in Hall A and Hall B)			

Day 1: **07-10-2023(Hall B)**			
10:05 – 11:25 (80 mins)	Clinical pearls: ❑ ENT pulmonology interaction a) Pulmonologist b) ENT specialist ❑ Adult vaccination – present & future ❑ Bronchiectasis: scheme of evaluation ❑ Exercise test in pulmonary practice ❑ 2 chair test Q + A& Panel ***Tea at Hall***	 Dr Debabani Biswas Dr Asok Saha Dr Sivaresmi Unnithan Dr. Raghava Rao G Dr. Kanishka Kumar Mr. Wrick Chakrabortywith Dr. Parthasarathi Bhattacharyya	**Coordinator:** Dr. Saibal Ghosh **Expert panellist:** Dr. Pranab Mondal Dr. Somnath Bhattacharyya
11:25 – 12:40 (75 mins)	Inauguration, APC Roy Award and Dr. S N De Memorial Oration	*At Hall A*	
12:40 – 01:00 (20 mins)	*Durga puja: Living Doll's show*	*At Hall A*	
01:00 – 02:00 **(60 mins)**	***Lunch***		
02:00 – 03:00 (60 mins)	National Pulmo Quiz (elimination round)	Quiz master: Dr. Sushmita Roychowdhury Dr. Arindam Mukherjee	
03:00 – 03:30 (30 mins)	Clinical pearls: an interesting case	Dr. Bhanu Pratap Singh Solanki	Dr. MLG upta Dr Arunaloke Chakrabarti
03:30 – 03:45 **(15 mins)**	***Tea break***		
03-45- 4.45 (60 mins)	❑ Mucus management in airway diseases – ❑ Pulmonary rehab in COPD: perception to organization and translationto practice ❑ IPCR experience of COPD rehab Case presentation and endorsement	Dr. Avya Bansal Dr Alpa Dalal Faculty from IPCR	**Coordinator:**Dr. Milind Baldi **Expert panellist:** Dr. Sudip Ghosh Dr. Sourin Buniya Dr. Ajoy Sarkar Dr. Debabani Biswas
04-45- 5.05	**Industry Sponsored Session:**Current Lung Cancer Management-What physicians need to know	Dr. P N Mohapatra	Dr. Sabyasachi Chowdhury
Day 2: **08-10-23(Hall A)**			
10:00 – 10:40 (40 mins)	Platform presentation of selected abstracts		Dr. Rupak Ghosh Dr. Angira Dasgupta Dr. M L Gupta Dr. Supriya Sarkar
10:40 – 10:55 **(15 mins)**	***Tea break***		
10:55 – 12:15 (80 mins)	**Symposium on allergy**:Co-ordinator – i) Dr. Raj Kumar ❑ Fundamentals of pathophysiology of allergy ❑ Rational use of anti-allergy medications. ❑ Immunotherapy for asthma: when and how? ❑ Indian allergy guideline: the salient points for practitioners ❑ Allergy test and approach to Naso-bronchial allergy – Group discussion Q + A	 Dr Saibal Moitra Dr Shambo S Samajdar Dr Raj Kumar Dr. Raj Kumar	**Coordinator:** Dr. Saibal Moitra **Expert panellist:** Dr. ArnasisHota Dr. Arnab Maji Dr. Tarashankar Malik
12:15 – 12:45 (30 mins)	Igniting innovations in young mind	Dr. Samiran P anda	Dr. Rabin Misra Dr. Parthasarathi Bhattacharyya
12:45 – 01:15 (30 mins)	Somatizationas pulmonology problems: (Dysfunctional breathing and others)	Dr. Viswesvaran B	Dr. Biswajit De Dr. Somnath Kundu

01:15 – 02:15 (60 mins)	**Lunch**		
02:15 – 02:55 (40 mins)	National Pulmo Quiz (Final round)	Quiz master: Dr. Sushmita Roychowdhury Dr. Arindam Mukherjee	
02.55- 3.25 (30 mins)	Education, training, career and ethics: getting the balance right	Dr Dhiman Ganguly	Dr. Biswanath D as
03.25- 05-05 (100 mins)	Symposium: **PH** ❑ Definition & etiology ❑ Clinico radiological identification ❑ Echocardiography in diagnosis and evaluation of PH ❑ RHC – when & why ❑ Treatment strategy of PH with specific reference to class II & class III: case based discussion Q + A and our experience of PH ***Tea at Hall***	Dr Pawan Agarwal Dr. Debraj Jash Dr. Aniruddha De Dr. Shuvanan Ray Dr R K Sharma Ms Sayoni Sengupta	**Coordinator:** Dr. Parthasarathi Bhattacharyya **Expert panellist:** Dr. Rupak Ghosh Dr. Sujan Bardhan Dr Soumita Kumar Dr. Debanu Ghosh Roy Dr. Soumya Das
05:05 – 05:20 (15 mins)	*Tea break / Awards (Quiz, poster) and valedictory session*		

Day 2: **08-10-23(Hall B)**			
10:00 – 11:30 (90 mins)	**Case-based learning:** ❑ Pleural diseases ❑ An eosinophilic lung disease ❑ Granulomatous lung disease	 Dr. Sourabh Pahuja Dr. Shelly Shamim Dr. Raghava Rao G	**Coordinator:** Dr. Supriya Sarkar **Expert panellist:** Dr. Somnath Kundu Dr. Soumya Das Dr. Sourin Bhuniya
11:30 – 11:45 (15 mins)	***Tea break***		
11:45 – 01:10 (85 mins)	Symposium: **Occupational lung diseases** ❑ Occupational asthma ❑ Hypersensitivity pneumonitis as occupational hazard ❑ Evaluation of silicosis: clinic-radiological appraisal ❑ Early and novel detection of silicosis Q + A Session	 Dr. Arindam Mukherjee Dr Suranjan Mukherjee Dr. M L Gupta Dr. Kamalesh Sarkar	**Coordinator:** Dr Kunal Datta **Expert panellist:** Dr. Amitava Sengupta Dr. Soumya Das Dr. Saikat Nag
01:10 – 02:10 (60 mins)	***Lunch***		
02.10 pm -04:45 pm (155 mins)	Workshop: **Sleep medicine** a) Overview of Polysomnography b) Predictive questionnaires and pre-test assessment. c) Doing the PSG - Hooking up a patient ❑ Speech ❑ Demonstration d) How to interpret a PSG report ❑ Speech ❑ Demonstration e) Prescribing PAP devices – points to ponder ❑ Demonstration f) Trouble shooting and compliance report assessment - Demonstration. ***Tea at Hall***	 a) Dr Shyamal Sarkar b) Dr. Avishek Kar c) Dr Sourav Das d) Dr. Sourav Das e) Dr. Khusboo Saxena f) Dr. Avishek Kar / Dr Sourav Das / Dr. Khusboo Saxena	**Co-ordinator:** Dr. Avishek Kar

A Patient with Fever and Bilateral Pulmonary Nodules

Author: Dr. Bhanu Pratap Singh Solanki

Co-author: Dr. M. L. Gupta, Dr. S. S. Yadav

Institute: Santokhba Durlabhji Memorial Hospital cum Research Centre, Jaipur

Miliary nodules can be manifestation of variety of diseases and the differential diagnosis is broad. With the help of high resolution computed tomography, micro nodules are classified according to their distribution in the secondary lobule into three pattern- centrilobular, perilymphatic and random. The miliary pattern is common to various diseases and no single imaging feature is specifically diagnostic. The main entities are tuberculosis, histoplasmosis, mycoplasma, nocardia and blastomycosis; immune and inflammatory disorders like sarcoidosis, tropical pulmonary eosinophilia and hypersensitivity pneumonitis (HP); malignant disorders like bronchoalveolar carcinoma. Other causes of miliary shadows include pneumoconiosis especially silicosis.

The histoplasmosis cases from India are based on the study from Randhawa and Gugnani who found a total of 426 cases (1954–2018) and 207 cases from the literature search (2018–2020, excluded studies cited in Randhawa and Gugnani). The trend of reporting histoplasmosis cases was notably increased in the past years, which might be due to the rising of awareness among clinicians to diagnose this disease.

We encountered a similar case of a young male presenting with fever and lung nodules. Workup was done and diagnosis of histoplasmosis was made. Details will be discussed during the conference.

Radiological and serological evaluations of suspected vs. confirmed chronic hypersensitivity pneumonitis (cHP).

Authors: Sayanti Karmakar1, Mintu Paul2, Suman Pratihar3, Parthasarathi Bhattacharyya4

1Research Fellow, Institute of Pulmocare and Research, Kolkata, 2Research Assistant, Institute of Pulmocare and Research, Kolkata ,3Laboratory Technician, Institute of Pulmocare and Research, Kolkata , 4Consultant Pulmonologist, Institute of Pulmocare and Research, Kolkata.

Background: Diagnosis of Hypersensitivity Pneumonitis(HP) is difficult and thus, radiological with serological investigations may be beneficial.

Methodology: A cohort of suspected cHP patients based on changes on HRCT characteristics, were recruited. Investigations included precipitating factors like demographic, spirometric and serological variables. They were evaluated with automated counting of the peripheral blood corpuscles and the presence of the critical IgG-precipitin titre antibodies against common and available antigens (Alternaria, Cladosporium, Penicillium, Aspergillus, Pigeon serum protein and Mucor sp.). The participants were divided into 'confirmed' and 'suspected' cHP based on the positivity of the precipitin-antibodies by immunocap method. The neutrophil to lymphocyte ratio(NLR) was calculated as the absolute neutrophil count divided by the absolute lymphocyte count and Lymphocyte to monocyte ratio(LMR) was calculated as the absolute lymphocyte count divided by the absolute monocyte count. Parameters derived from serological investigations like NLR and LMR and radiological characteristics were also compared between the groups.

Results: The two groups (suspected vs. confirmed) showed similarity based on demographic and spirometric variables. Among all the HRCT chest like-reticulation, haze, traction bronchiectasis, mosaic showed significantly higher score in confirmed patients than suspected HP patients (12.08 ± 4.49 vs. 4.22± 6.25, $p<0.001$). Upon intra-group analysis, LMR was observed to be significantly higher than its counterpart NLR in both the groups($p<0.001$). An inter-group comparison revealed no statistically significant difference in NLR or LMR.

Conclusion: The significantly higher appearance of mosaic (with lobular hyperlucency) in HRCT is observed in confirmed CHP suggesting higher presence of the classical sign of small airway obstruction in the condition.

Potential role of a DNA repair protein, RadSO, in attenuating features of Acute Lung Inj ury

ArchitaRay';2, Ashish Jaiswal1'2, Ulaganathan Mabalirajan1' -*

Molecular Pathobiology of Respiratory Diseases, Cell Biology and Physiology Division, Council of Scientific and Industrial Research (CSIR)-Indian Institute of Chemical Biology (IICB), Kolkata-700091, West Bengal, India.
2Acaderny of Scientific and Innovative Research (AcSIR), Sector-19, Karnla Nehru Nagar, Ghaziabad-201002, India
* Corresponding author: Ulaganatlian Mabalirajan; Email ID - rnabsorne@yahoo.co.in Presenting author: Archita Ray; Email ID - rayarchita95@gmail.com Abstract

Background: Acute lung injury (ALI) is an umbrella term for inflammatory lung diseases mat can range from short term lung dyspnea to acute respiratory distress syndrome (ARDS). It involves the distortion of lung endothelial and epithelial wall following excessive transepithelial and trans-endothelial migration of neutrophils. Pro-inflammatory cytokines like IL-6, IL-17 get released mat brings more neutrophils. There is degradation of extracellular matrix proteins causing an increase in epithelial permeability, vascular leakage, and oedema.

Methods: A mice model of ALI was developed by intratracheal administration of LPS. Rad50 siRNA was given to the mice intranasally and Rad50 plasrnid was administered via intravenous route. Bronchoalveolar lavage fluid was collected and differential cell count was performed. Lungs were harvested and the lung hornogenate was used to perform western blot and ELISA. A portion of the lung was fixed with formalin, sectioned for staining.

Results: In Rad50 knockdown mice, we observed increased levels of IL 17 and severe neutrophilia. Through neutrophil chernotaxis assay, we mimicked the neutrophil migration in blood vessel and we found mat Rad50 deficient bronchial epithelia secretes some factors mat captivates neutrophil. Importantly, we found a reduction in Rad50 expression in lungs of LPS administered mice. Further, when LPS administered mice were given Rad50 plasrnid, mere were reduction in the features of ALI like decrease in alveolar wall thickenings and reduced neutrophil infiltration in alveoli.

Conclusion: This study shows the protective role of Rad50 in reducing the features of ALI and thus it could be a therapeutic target in neutrophil dominant lung diseases like ARDS.

Glycopyrronium Responsiveness as an add-on to Salbutamol Responsiveness is an Independent Phenomenon: An Appraisal.

*Shuvam Ghosh, **Srijita Sen, ***Debkanya Dey, #Abhishek Kar, #Parthasarathi Bhattacharrya

*Research Scholar, Institute of Pulmocare and Research, Kolkata
**Junior Research Fellow, Institute of Pulmocare and Research, Kolkata,
***Senior Research Fellow, Institute of Pulmocare and Research, Kolkata,
#Consultant, Institute of Pulmocare and Research, Kolkata

Background: Salbutamol, a β2- agonist, responsiveness testing is integral to spirometry in OAD (obstructive airway disease). Of late, glycopyrronium is used for assessment of class (anti-muscarinic agent: AMA) specific bronchodilator response immediately after testing salbutamol responsiveness. This effect may not be an independent but a spill over effect of salbutamol.

Methods: OAD patients selected from the out-patient department on written consent were first tested for salbutamol responsiveness. Immediate to the assessment of the salbutamol responsiveness, the patients were randomized to inhale either 50 µgm of dry powder of glycopyrronium or 4 puffs of placebo from MDI in an open, prospective, randomized observation. The changes after the second inhalation was assessed after 30 minutes by repeating spirometry, to compare the add-on effect of placebo and glycopyrronium.

Results: We had 48 patients in each group for placebo (mean age 57.58 ± 14.62) and glycopyrronium (mean age 52.54 ± 19.29) induced add-on responsiveness assessment. While the glycopyrronium inhalation resulted an unequivocal improvement in FEV1, there was universal but mild reduction of FEV1 with placebo inhalation. The add-on effect of glycopyrronium has been found universally positive for OAD as a whole (p= 0.0017), asthma (p=0,05; n=14), COPD (p=0.0304; n=12), and unclassified (p=0.06; n=22) while that of placebo was universally negative.

Conclusion: The spirometric improvement in glycopyrronium responsiveness test subsequent to assessment of salbutamol responsiveness appears independent with no question of any spill over effect on using salbutamol on serial spirometric assessment. Hence, the claimed glycopyrronium responsiveness in the serial testing protocol after testing salbutamol responsiveness is independent and class-specific of the AMA.

Real-world distribution of Th2 activity in pragmatically diagnosed obstructive airway disease: an appraisal.

*Shuvam Ghosh, **Srijita Sen, ***Debkanya Dey, #Abhishek Kar, #Parthasarathi Bhattacharrya

*Research Scholar, Institute of Pulmocare and Research, Kolkata
**Junior Research Fellow, Institute of Pulmocare and Research, Kolkata,
***Senior Research Fellow, Institute of Pulmocare and Research, Kolkata,
#Consultant, Institute of Pulmocare and Research, Kolkata

Background: High Th2 activity suggests responsiveness to ICS in obstructive airway diseases (OAD). Hence, the knowledge of relative distribution of Th2 high activity in OAD is important.

Objective: To determine the Th2 status of patients with OAD in general.

Methodology: Consecutive symptomatic subjects of clinically diagnosed OAD were selected on a protocol and subjected to spot spirometry, FeNO (fractional exhaled nitric oxide), absolute eosinophil count (AEC) in peripheral blood, and serum IgE. The cut-off between normal and high value being 25ppb for FENO, 300 cells/ml for AEC and 378 IU/ml for IgE. Th2-high inflammatory status were marked by increase in all or any two of the parameters in 'absolute' or 'possible' terms. FEV1 reversibility ≥200 ml plus 12% and FEV1/FVC<0.7 with reversibility <200 ml and/or 12% were used to identify asthma and COPD respectively. Patients of OAD, failing to qualify as asthma or COPD were termed as 'unclassified'.

Results: 246 patients (155 males; 91 females) were included of which asthma and COPD consisted of 70(28.4%) and 89(36.1%) respectively; the rest 87(35.3%) were 'unclassified' OADs. Th2 high subjects (absolute and possible) were 23(32.8%) and 19(27.1%) for asthma, 15(16.8%) and 25(28%) for COPD, and 16(18.3%) and 28(32.1%) for the 'unclassified' group. Similarly, absolute and possible non-Th2-high inflammation were found in 7(10%) and 21 (30%) in asthma, 20(22.4%) and 29(32.5%) in COPD and 19(21.8%) and 24(27.5%) in 'unclassified' groups.

Inference: Th2 activity based endo-phenotypic demarcation of OAD as a whole is feasible in real world practice. The prospect of treatment accordingly remain to be looked for.

Identification of COPD exacerbation markers from sputum microbiome

Dibakar Roy^, Sudipto Saha*

Department of Biological Sciences, Bose Institute, Kolkata, India - 700091
^Presenting author (email: droy7329@gmail.com)
*Corresponding author (email: ssaha4@gmail.com)

Abstract: Background: Chronic Obstructive Pulmonary Disease (COPD) can be classified into four stages: COPD GOLD 1, 2, 3, and 4, according to the Global Initiative for Chronic Obstructive Lung Disease (GOLD) strategy, based on spirometry test. An exacerbation in COPD is characterized by worsening symptoms such as dyspnea, cough, and phlegm (sputum), leading to severe morbidity and mortality. It is often associated with increased local and systemic airway inflammation caused by microbial infection.

Method: A Whole Metagenome Sequencing (WMS) dataset of the sputum microbiome in COPD, including information about COPD GOLD stages (2, 3, 4) and exacerbation status (n = 99), was reanalyzed using the Kraken2 tool and Phyloseq, MicrobiomeMarker packages in R software to identify the microbial markers in the COPD exacerbation groups.

Result: Linear discriminant analysis (LDA) of the exacerbators with the non-exacerbators revealed 12 differential and statistically significant microbial markers, including *Moraxella nonliquefaciens* and *Gordonia terrae*. Only a few markers, like *Exiguobacterium* sp. *N4-1P* and *Staphylococcus pseudoxylosus* are statistically significant when the exacerbation group is differentiated into individual exacerbator groups and compared with the independent non-exacerbator group (COPD GOLD 2 exacerbation vs. COPD GOLD 2 without exacerbation). The relative abundance of microbial profile showed that *Alphainfluenzavirus Influenza A virus* and *Mastadenovirus Human mastadeno virus B* are more abundant in the COPD GOLD 2 exacerbation group, whereas *Veillonella atypica, Moraxella catarrhalis* are enriched in the COPD GOLD 3 and 4 exacerbation groups.

Conclusion: In summary, this study identifies the differential and significant microbial markers in the COPD exacerbation groups that can be targeted for diagnosis and drug therapy.

Choice of Pulmonary Rehabilitation module by COPD population – a real world approach.

Wrick Chakraborty*, T.D. Viswanathan*, Sneha Biswas**, Anannya Batabyal**, Dr. Parthasarathi Bhattacharyya*#

*# Consultant, *Research assistants, ** Physiotherapist at the department of pulmonary rehabilitation, Institute of Pulmocare and Research, DG-8, Action Area -1,Kolkata-156

Introduction : Pulmonary rehab is an integral part of the management of COPD. One needs to tailor-make the rehab schedule for its success.

Objective : To look for relative frequency of joining Pulmonary Rehab program in different pragmatically framed modules.

Methods : We had four modules already framed based on objective response of the COPD patients as Module-I (Once a month), Module-II (once or twice a week), Module-III (once every three months) and Module-IV (with patient's desire in real world subjects). We noted the number of subjects who voluntarily joined different modules.

Results : A total of 586 randomly chosen COPD patients had been given options to join Pulmonary Rehabilitation of which 456 patients joined different modules. The subjects joining in different modules are 33.55% (M-I), 24.12% (M-II), 42.32% (M-III). M-IV (130 patients) opted not to join any module.

Conclusion : The self-motivated joining of Pulmonary-rehab is relatively poor. Efforts are needed to analyze the reasons and address them.

Differentiation of diseased state from normal using 2-Chair Test: an appraisal

Wrick Chakraborty, Parthasarathi Bhattacharyya, Sudipta Bhattacharyya
Institute of Pulmocare and Research, DG-8, Action Area -1,Kolkata-156

Introduction : 2 Chair test (2CT) has been forwarded recently as post exercise recovery response testing tool for cardio-pulmonary problems. However the best parameter of 2CT to understand any abnormality is not yet categorically defined.

Objective : To find out the most appropriate parameter of 2CT to differentiate between 'normal' and symptomatic diseased population.

Methods : In a prospective protocol we selected a cohort of symptomatic patients(Irrespective of diagnosis) attending our OPD. We also selected another cohort of so called 'normal' persons who had no symptoms, and normal Cxr(PA) and spirometry. Subjects belonging to both the groups were subjected to 2CT and scoring of their sickness in 0 to 10 ('0' meaning none and '10' meaning maximum possible) scale and also 2CT. All the variables(parameters) of the test were checked [for Minimum Pulse Rate, Maximum Pulse Rate, Maximum Pulse Rate change, Cumulative Pulse Rate change, Maximum SpO2(Maximum saturation), Minimum SpO2 (Minimum Saturation), Maximum desaturation (De-Sat max) i.e. maximum difference in baseline and end line saturation , Cumulative De-sat max and Duration of Tachycardia] for both the groups. The symptomatic subjects had primarily different respiratory diseases (both obstructive and restrictive). The 2CT variables were used to compare the symptomatic and the 'normal' person and the best of the parameters was chosen .

Results : 120 patient's and 30 normal person's records were analyzed. The correlation between 2CT variables and the sickness score were charted in a heat-map and the best correlating parameter is detected as De-Sat max (p-value =0.0027**) followed by Cumulative De-Sat Max (p-value =0.0117*). Perceived sickness scores demonstrated high significance (p-value <0.0001****) to De-sat max, thus highlighting the potential impact of ailment on post-exercise recovery.

Inference : The De-Sat max appears to be the most sensitive parameter to differentiate normal from symptomatic diseased population. Further research is warranted.

The correlation of De-sat max of 2-Chair Test with 6 Minute Walk Distance: an appraisal

Wrick Chakraborty, Parthasarathi Bhattacharyya, Sudipta Bhattacharyya
Institute of Pulmocare and Research, DG-8, Action Area -1, Kolkata-156

Background : 2-chair test is a recently evolved measurement instrument of the post exercise cardio-pulmonary recovery response in which the maximum desaturation has been used as the marker of sickness. It is important to see the relationship of the desat-max to the 6 minutes' walk distance, the accepted and recognized measurement of the functional status of the patients.

Methods : Volunteers selected from an out-patient based diagnosis of COPD patients (as per the GOLD guideline) were included on proper informed consent. They underwent both the 6 minutes' walk test and the 2-chair test with intervening rest of at least 30 minutes on the same day. The association between the two measurements was ascertained statistically by Pearson's correlation coefficient.

Results : A total of 130 COPD patients (age 65 Years, male: female 110:20) were included. The mean 6MWD and the mean desat max in 2CT were 312.94 and -1.62 The two items (desat-max and 6MWD) were found to have no significant correlation (r= 0.0678)

Conclusion : The 6MWD and the desat-max 2CT appears unrelated.

Correlation between DLCO and Cardiopulmonary exercise testing in post-COVID-19 patients.

Jessy Aleyamma Jose, Sourabh Pahuja, Deepak Prajapat, Deepak Talwar

Department of Pulmonary, Sleep, Allergy, and Critical Care Medicine, Metro Hospitals and Heart Institute, Noida, India
Phone:6282622545
Email: j es sy aley ammaj ose @ gmail. com

Background and Objectives: Cardiopulmonary exercise testing (CPET) is a dynamic, non-invasive assessment of the Cardiopulmonary system at rest and during exercise. CPET determines the functional capacity of an individual. COVID-19 had emerged as one of the largest pandemics in human history. Various organs are affected in post-COVID-19 patients, especially pulmonary complications. The current study aimed to compare CPET abnormalities in patients with different DLCO patterns.

Methods: 45 patients who have been diagnosed as COVID-19 positive were identified and are in follow-up. Data collected from Cardiopulmonary exercise testing and pulmonary function testing were analyzed. Ethical clearance was taken from the Institution Ethics Committee (Ethical Review Board, Metro Hospitals and Heart Institute)before carrying out this research

Results: We observed Ventilatory Limitation being the most common CPET abnormality with 46.67 % of post-covid patients. Peripheral Muscle Deconditioning was the second most common CPET abnormality observed in our study population with 44.44 % of the study population. Further, we demonstrated that Ventilatory Limitation and Gas Exchange Abnormality was significantly associated with the occurrence of aberrant DLCO levels (p value=0.015 and 0.024 respectively) in post-COVID-19 patients. Further, in our study we also observed that there is progressive fall in DLCO with the severity of COVID 19.

Conclusion: CPET is a reliable method for the evaluation of post-COVID-19 sequelae and is even more useful in evaluating the cause of dyspnea in conditions where the pulmonary function test is normal. The increase in the occurrence of Ventilatory Limitation and Gas Exchange Abnormality in post-covid patients and its association with aberrant DLCO levels denotes the effect of COVID-19 disease on pulmonary functions, thus culminating in post-COVID-19 sequelae.

Keywords: CPET, COVID-19, post COVID 19 sequalae

Distribution of Inhaled Corticosteroids (ICS) response with different bronchodilators reversibility

Authors: Srijita Sen1 , Shuvam Ghosh2 , Debkanya Dey3 , Rajat Banerjee4 , Parthasarathi Bhattacharyya 5

1Junior Research Fellow, Institute of Pulmocare and Research, Kolkata, 2 Research Scholar,Institute of Pulmocare and Research, Kolkata, 3 Senior Research Fellow, Institute of Pulmocare and Research, Kolkata, 4 Professor, Biotechnology and Dr. B.C. Guha Centre for Genetic Engineering and Biotechnology, Ballygunge Science College, University of Calcutta

5Consultant, Institute of Pulmocare and Research, Kolkata

Background: Proactive inhaled corticosteroids (ICS) responsiveness assessment is important in obstructive airway disease (OAD).

Methods: OAD was clinically diagnosed on the presence of any four of the five symptoms (cough, shortness of breath, wheeze, expectoration and chest tightness) in patients who attended the specialist out-patient department. Clinicoradiologically chronic bronchitis, bronchiectasis and cystic fibrosis were excluded. These patients underwent spirometry with salbutamol and glycopyrronium. The reversibility criteria was 12% and 200ml for salbutamol and 100ml for glycopyrronium. Further, these patients were checked for their steroid responsiveness by checking for two markers: FeNO (Fractional exhaled nitric oxide) and AEC (absolute eosinophil count). [patients with both FeNO and AEC high {FENO≥25 parts per billion (ppb) and AEC≥300 cells/ul}were steroid responsive and patients with both low [FeNO<25 ppb and AEC<300 cells/ul] were steroid non-responsive).

Results: A total of 674 OAD patients were included in this study among which 654 patients and 523 patients consented for pulmonary function test (PFT) with salbutamol only and both the bronchodilators respectively. Out of 230 salbutamol reversible patients, 74 (32.17%) patients were corticosteroid responsive and out of 424 salbutamol non-reversible patients, 67 (15.8%) patients were corticosteroid responsive. Apart from salbutamol, corticosteroid responsiveness [n=56 (25.22%)] is also seen among 222 glycopyrronium responsive patients. Among 301 glycopyrronium non-responsive patients, 62 (20.59%) patients also showed ICS responsiveness.

Conclusion: A good proportion of OAD patients show steroid responsiveness irrespective of their reversibility to salbutamol or glycopyrronium. These patients when given ICS are hypothesised to show improvement in their overall lung fucntion. This application demands further research.

Dual bronchodilator reversibility: disease wise distribution

Authors: Srijita Sen1 , Shuvam Ghosh2 , Debkanya Dey3 , Rajat Banerjee4 , Parthasarathi Bhattacharyya 5

1Junior Research Fellow, Institute of Pulmocare and Research, Kolkata, 2 Research Scholar,Institute of Pulmocare and Research, Kolkata, 3 Senior Research Fellow, Institute of Pulmocare and Research, Kolkata, 4 Professor, Biotechnology and Dr. B.C. Guha Centre for Genetic Engineering and Biotechnology, Ballygunge Science College, University of Calcutta

5Consultant, Institute of Pulmocare and Research, Kolkata

Background: Bronchodilator reversibility conventionally includes salbutamol effect in spirometry. Of late, glycopyrronium (GP) has also been proposed on serial inhalation for responsiveness test after salbutamol reversibility. The distribution of the two reversibilities across the spectrum of Obstructive Airway Disease (OAD) needs to be explored.

Methods: Study begins with recruitment of the OAD patients from the out-patient department of the institute and subjecting them to serial reversibility test first with salbutamol followed by GP. Salbutamol reversibility classified these patients into two major groups: asthma (FEV1 reversibility≥ 12%and≥ 200ml and COPD (FEV1/FVC<0.7and FEV1 reversibility<12%and<200ml) and the rest "unclassified". Comparison was done between the spirometric data post salbutamol and post GP for all the three groups. Further, combined reversibility was also recorded and compared.

Results: Out of 1580 OAD patients, asthma, COPD and unclassified groups constituted 329 (20.8%), 641 (40.56%) and 610 (38.61%) respectively. Salbutamol reversibility was highest in asthma (327.1±120.9ml, 25.83±14.73%) followed by unclassified (113.3±96.18ml, 9.522±7.907%) and COPD (35.40±70.33 ml, 3.245±5.217%). The add-on GP revesibility was highest for COPD (84.07±96.66ml, 7.055±8.526%), then asthma (73.74±115.8ml, 4.549±7.192%) and unclassified (45.43±97.82ml, 3.340±6.883%). Significant differences were seen in between salbutamol reversibility and add-on GP reversibility of all three groups (p values<0.0001). On evaluating the combined reversibility by adding salbutamol and add-on GP reversibility, asthma ranked the highest (401.5±173.9ml, 31.68±18.74%) followed by unclassified (158.7±136.3ml, 13.34±11.71%) and COPD (119.5±109.3ml, 10.79±11.55%).

Conclusion: Although add-on GP reversibility is highest in COPD, the combined reversibility adding both salbutamol and GP reversibility is highest in asthma followed by unclassified and COPD.

Unclassified Obstructive Airway Disease (OAD) : an elaboration on the reversibility states

Authors: Srijita Sen1 , Shuvam Ghosh2 , Debkanya Dey3 , Rajat Banerjee4 , Parthasarathi Bhattacharyya 5

1Junior Research Fellow, Institute of Pulmocare and Research, Kolkata, 2 Research Scholar,Institute of Pulmocare and Research, Kolkata, 3 Senior Research Fellow, Institute of Pulmocare and Research, Kolkata, 4 Professor, Biotechnology and Dr. B.C. Guha Centre for Genetic Engineering and Biotechnology, Ballygunge Science College, University of Calcutta

5Consultant, Institute of Pulmocare and Research, Kolkata

Background: Obstructive Airway Disease (OAD) constitute asthma, Chronic obstructive pulmonary disorder (COPD), chronic bronchitis, bronchiectasis and cystic fibrosis, the first two being very frequent. It seems important to understand the distribution of asthma and COPD in clinically suspected OAD population.

Methods: Clinically suspected OAD patients (the presence of any four of the five symptoms such as cough, shortenss of breath, wheeze, tightness of chest and expectoration) were included. Other cases of bronchiectasis, chronic bronchitis and cystic fibrosis were excluded. All the patients underwent spirometry with reversibility by salbutamol. Based on the salbutamol reversibility, these patients were classified into asthma (patients with FEV1 reversibility≥12% and≥200ml and COPD (FEV1/FVC<0.7 and FEV1 reversibility<12%and<200ml). A group of patients did not fall into any of the two categories. They were included under a new group "unclassified".

Results: Total n=1580 OAD patients were recruited in this study. Asthma and COPD constituted 329 (20.8%) and 641 (40.56%) respectively. 610 (38.61%) patients belonged to the redundant group "unclassified". Further, the unclassified group (n=610) was divided into five subgroups based on their variable FEV1 reversibility (both % and absolute values). The five sub-groups are: a) FEV1/FVC≥0.7, FEV1 reversibility<12% and<200ml, n=324; b) FEV1/FVC≥0.7, FEV1 reversibility≥12% and <200ml, n=22; c) FEV1/FVC≥0.7, FEV1 reversibility<12% and≥200ml, n=54; d) FEV1/FVC<0.7, FEV1 reversibility≥12% and<200ml, n=204; e) FEV1/FVC<0.7, FEV1 reversibility<12% and≥200ml, n=6.

Conclusion: Apart from asthma and COPD, a good chunk of 'unclassified' OAD patients (38.61%) did not fit into any of the two groups. Further research needs to be done to elaborate about these patients.

Notes:

Meta-analysis of the lung and gut microbiomes of asthmatics

Paramita Roy^, Sudipto Saha*

Department of Biological Sciences, Bose Institute, Kolkata, India - 700091
^Presenting author (email: royparamita95@gmail.com)
*Corresponding author (email: ssaha4@gmail.com)

Background: Several amplicon sequencing and Whole Metagenome Sequencing (WMS) studies of lung and gut microbiomes of asthma, COPD, and healthy subjects were performed. There are reports of the dysbiosis of the lung and gut microbiomes in obstructive pulmonary diseases like asthma and COPD.

Methodology: Here, we have collected, compiled, and reanalyzed the amplicon sequencing and WMS data of gut and lung microbiomes from asthma, COPD, and healthy individuals. The Kraken2 tool was used for taxonomic assignment. PICRUSt2 and HUMAnN3 were used for the functional analysis of amplicon and WMS data, respectively. The CoNet plugin of Cytoscape was used to generate microbe-microbe interaction networks in disease and healthy conditions.

Results: Five major phyla- Actinobacteria, Bacteroidetes, Firmicutes, Fusobacteria, and Proteobacteria in different ratios both in lung and gut microbiomes of diseases and healthy subjects were identified from taxonomic analysis of amplicon and WMS data. Amplicon sputum data showed a higher abundance of the genus *Haemophilus* and *Streptococcus* in asthma, and these results were further observed in WMS sputum data at the species level, where *Haemophilus influenzae* and *Streptococcus pneumoniae* were more abundant in the lung microbiome of asthmatics when compared to COPD and healthy. Amplicon stool data showed the abundance of genus *Peptoniphilus* only in asthmatics and a decrease in the abundance of genus *Bacteroides* in the gut microbiome of asthmatics compared to COPD and healthy. The functional analysis predicted specific pathways and metabolites in the lung and gut microbiomes of asthmatics. Networks demonstrated alteration of microbe-microbe interactions in disease conditions compared to healthy states.

Conclusion: In summary, specific microbial genera, species, microbial pathways, and metabolites were identified from the lung and gut microbiomes of asthmatics.

Evaluation of important cardio-pulmonary factors for influencing the Desat-max in 2 chair test and impact of 2CT on the health status in COPD-PH.

Sayoni Sengupta1, Dipanjan Saha1, Sayanti Karmakar1, Mintu Paul2, Srijita Sen1,Shuvam Ghosh1, Debkanya Dey1, Avishek Kar3, Parthasarthi Bhattacharyya3

1Research Fellow, Institute of Pulmocare and Research, Kolkata, 2Research Assistant, Institute of Pulmocare and Research, Kolkata, 3Consultant Pulmonologist, Institute of Pulmocare and Research, Kolkata.

Background: The desat-max of 2CT has been used to identify responders to vasodilators in COPD-PH (pulmonary hypertension). The association of the desat-max with the possible cardiopulmonary factors contributing to it and that with the health status seems important.

Methods: Patients with COPD diagnosed on GOLD criteria with clinico-radiological and echocardiographic evidence of PH were evaluated with 2-chair test, CAT (COPD Assessment Test) and Doppler echocardiography. Measurements like echocardiography derived systolic pulmonary artery pressure (sPAP) , E/e' (reflecting left ventricular diastolic dysfunction) were noted; along with other factors like FEV1 in spirometry (representing airflow limitation), and CAT (for understanding the health status of patients). These parameters were then statistically analysed to see the co-relationship with desat-max of 2-chair test. The desat max was derived to understand its association with parameters like CAT score, FEV1, systolic PAP pressure and E/e', through Spearman's correlation coefficient.

Results: There was a significant but moderate co-relationship of desat-max with FEV1 r = 0.40; p-value =<0.001), CAT (r= 0.37, p-value= 0.0001), systolic-PAP (r=-0.3126;p=0.0014) and E/e' (r= 0.03, p-value = 0.74). with desat max. The 'r' for the Desat-max to CAT score was the best (r=0.3705, p=0.0001). A better correlation was observed between FEV1, CAT and systolic PAP. However, a poor association was reported with E/e', the marker for LVDD.

Conclusion: Desat-max of 2-CT is hence influenced by the underlying parameters, i.e. CAT, FEV1 and systolic PAP. However, desat max is not well correlated with E/e'.

Identifying differentially regulated pathways and subnetworks associated with allergic diseases and cancer

Shazia Firdous^, Sudipto Saha*

Department of Biological Sciences, Bose Institute, Kolkata, India - 700091
^presenting author (email: shazia.sfi22@gmail.com)
*corresponding author (email: ssaha4@gmail.com)

Background: Epidemiological study reports both positive and negative effect of allergic diseases on cancer progression depending on cancer type. However, the link between these two diseases has not been validated at the molecular level. We aim to identify the association of allergic diseases with different types of cancer at the molecular and pathway level.

Method: The allergic disease biomarkers from atopic asthma, allergic rhinitis, and others were obtained from DAABV2. The cancer biomarker database BioXpress, was selected for cancer (bladder, breast, head and neck, lung, pancreatic) biomarkers. The common biomarkers from these two databases were termed AllergoOncology (AO) biomarkers. Pearson correlation analysis was performed for AO biomarkers in R. Ingenuity pathways analysis (IPA) was used to obtain enriched AO canonical pathways. String was used to identify subnetworks associated with AO

Results: A weak positive correlation of allergic disease was observed with five different types. The top five pathways such as upregulated in both (Interferon signaling), downregulated in both (IL9 signaling), upregulated in allergy, and downregulated in cancer (Complement system) and vice versa (IL23 signaling) were obtained. For the allergy up and cancer down category, eighteen pathways were reported to be common in allergic diseases and four types of cancer. Thirteen interaction networks were obtained for the AO biomarkers. Further, four common small subnetworks have been identified across thirteen pathways. Finally, from this analysis, a total of 24 AO biomarkers were identified which are upregulated in allergy and downregulated across four cancers e.g. STAT3, JUN, IL33, IL6, and TLR4.

Conclusion: The biomarker and pathway-level association study of allergic diseases and cancer can help researchers decode the unexplained pathophysiology between allergy and cancer.

Evaluating the effect of p-Benzoquione in Guinea pig lung- Deciphering the role of Vitamin-C

Riya Manna1, Debraj Roy1, Sampurna Bhattacharya2, Runa Sur2, Indu Bhushan Chatterjee1, Rajat Banerjee1*

1Department of Biotechnology and Dr. B. C. Guha Centre for Genetic Engineering and Biotechnology, University College of Science, University of Calcutta, 35, Ballygunge Circular Road, Kolkata 700019, West Bengal, India

2 Department of Biophysics, Molecular Biology and Bioinformatics, University college of Science, 92 APC Road, Rajabazar, Kolkata 700009, West Bengal, India

Introduction : Chronic obstructive pulmonary disease (COPD), a disease directly associated with cigarette smoking causes destruction of lung alveolar cells, also found to increase the probability of an apparently antagonistic disease, lung cancer by several folds. Thus the wound healing or repair mechanisms initiated due to inflammation and oxidative stress in COPD patients, may also trigger lung cancer development.

Objective : Decipher the molecular link and common cell signalling events, if any, underlying COPD and lung cancer, along with the role of Vit-C as preventive.

Experiment : It is established previously that para-benzoquinone (p-BQ), produced from para-benzosemiquinone, present in CS, is chiefly accountable for the emphysematous damage both, in vivo and in vitro when administered at high doses (2.5mg/ml). However, it was also shown to trigger cell proliferations in vitro at low doses of p-BQ (200ng/ml). Guinea pigs as Vit-C deficient model animal (as human are Vit-C deficient) were treated by intramuscular injections of p-BQ along with Vit-C as oral supplementation (1mg/kg body weight for Vit-C deficient group and 30mg/kg body weight for Vit-C sufficient group). The doses of p-BQ (25 ng/animal) were calculated based on the amount reported in commercial cigarette. For dosage, the body weight of animals were normalized. The lung tissues were collected at several time points for experiment like histology, morphometric analysis, western blot, immunohistochemistry.

Result : Experimental analysis indicate that the p-BQ increase the emphysematous effect as observed by gradual changes in the microenvironment. The remodelling may be prevented by Vit-C supplementation, but chronic inflammation along with lymphoid nodules exist in both Vit-C deficient and sufficient group.

Conclusion : These altered lung microenvironment may be indicative of many pre-malignant events.

Tussle in the universe of microbes; a clinician's conundrum

Dr. KUNAL DHAR,

MD Resident; Department of Respiratory Medicine, College of Medicine and Sagore Dutta Hospital, Kolkata-58, WB

Background : Zygomycosis/mucormycosis is a fungal [Mucor/Rhizopus/Absidia] infection commonly seen in immunocompromised patients and rarely in immunocompetent individuals.

Case Study: A 36-years-male, smoker [smoking index of 100], karyotypically known *Klinefelter Syndrome, on testosterone supplementation therapy for infertility;* presented to our OPD with progressively increasing painful right cheek swelling along with intermittent dry cough of 9 months. He was evaluated in another hospital 6 months ago and was diagnosed as *Cutaneous Tuberculosis* (acid-fast-bacilli positivity on smear-microscopy from FNAC). We investigated from MDCT [Face with PNS] and revealed *soft tissue swelling of heterogenous density over right malar area* with no neurological/bony involvement in MRI; while HRCT[Thorax] was suggestive of *multiple pulmonary nodules in right middle lobe.* Sputum microscopy (AFB), CBNAAT were negative but he had *Eosinophilia* on peripheral blood smear (absolute eosinophil count of 540/cmm). The HIV serologies was negative. Fiber-optic-bronchoscopy for broncho-alveolar-lavage (BAL) and excisional biopsy from cheek swelling was performed. The HPE disclosed granulomatous inflammation with Splendore-Hoeppli phenomenon suggestive of *Zygomycosis;* additionally, BAL fluid fungal culture was positive for Mucor; while CBNAAT & Mycobacterial Culture from both biopsy & BAL was negative. Treatment was initiated with 15 days IV *Liposomal Amphotericin B* followed by 3months of oral *Posaconazole*. The swelling and pain subsided gradually also follow up HRCT[Thorax] ensured clearing of right middle lobe nodules.

Discussion: Zygomycosis in an immunocompetent patient is possible and pose a diagnostic difficulty. Our patient responded excellently with antifungals. The background impact of Klinefelter Syndrome and Cutaneous Tuberculosis is unknown.

Conclusion: Pulmonary & Cutaneous Zygomycosis in a young immunocompetent patient with underlying Klinefelter Syndrome responded well to therapy.

Key words: Klinefelter syndrome, cheek swelling, cutaneous tuberculosis, right middle lobe nodule, eosinophilia, Splendore-Hoeppli phenomenon, Pulmonary & Cutaneous Zygomycosis.

PD05 - a novel Neutrophil Elastase inhibitor mitigates features of Acute Lung Injury

Joytri Dutta1,2, Ashish Jaiswal1,2, Ulaganathan Mabalirajan1, 2*

1Molecular Pathobiology of Respiratory Diseases, Cell Biology and Physiology Division, Council of Scientific and Industrial Research (CSIR)-Indian Institute of Chemical Biology (IICB), Kolkata-700091, West Bengal, India.

2Academy of Scientific and Innovative Research (AcSIR), Sector-19, Kamla Nehru Nagar, Ghaziabad-201002, India

***Corresponding author:** Ulaganathan Mabalirajan; Email ID – mabsome@yahoo.co.in

Presenting author: Joytri Dutta; Email ID – joytridutta@gmail.com

Background: Acute lung injury (ALI) is an acute inflammatory disorder involving excessive transepithelial and trans-endothelial migration of neutrophils. Neutrophils produce a serine protease called neutrophil elastase (NE) whose physiological action is to degrade phagocytosed foreign particles. Extracellularly, NE stimulates the release of pro-inflammatory cytokines like IL-6, IL8, TNFα, etc, and also induce mucin production from epithelial cells. It degrades extracellular matrix proteins like elastin, collagen etc. leading to increased lung epithelial permeability, vascular leakage and oedema. Our lab has recently identified a novel benzoxazinone derivative, PD-05 as a potent competitive inhibitor of human neutrophil elastase and demonstrated its protective role in emphysema.

Method: In this study, we developed a murine model of lipo-polysaccharide induced ALI wherein we treated the mice with PD-05. We measured the lung function and collected the bronchoalveolar lavage (BAL) fluid and lung tissue from the mice. We performed differential cell count and protein level measurement in BAL fluid. ELISA for proinflammatory cytokines and neutrophil elastase activity was performed. Alveolar septal thickness was measured in formalin fixed haematoxylin and eosin stained lung sections.

Results: PD-05 was able to reduce neutrophil infiltration, release of key pro inflammatory cytokines, vascular protein leakage and improve the lung function by inhibition of neutrophil elastase.

Conclusion: Thus, PD05 could be a potential candidate for further investigation as a drug for ALI treatment.

Malignancy OR Inflammation?

Anubhab Moulik,

3rd Year Post graduate trainee, NRS MEDICAL COLLEGE AND HOSPITAL

CORRESPONDING AUTHOR: Dr. JAYDIP DEB (HOD, Dept of Respiratory medicine, NRS MEDICAL COLLEGE)

CASE STUDY: Mrs. P S, a 21-year-old female presented with complaint of persistent dry cough, a dull aching chest pain on the right side since last 4 months with swelling of the face and upper limb since last 15 days. On general survey, the most important finding was swollen facies with engorged and prominent veins over the chest wall. Systemic examination done and it was suggestive of right sided mediastinal mass or upper lobe mass with right sided pleural effusion. Imaging findings corroborated with clinical examination and the CT guided biopsy approach was taken for diagnosis of anterior mediastinal mass. Pleural fluid was straw colored, lymphocytic, exudative with low ADA of 11.7 IU/liter. Pleural fluid cell block revealed no malignant cells but revealed plasma cells in addition to lymphocytes. CT guided biopsy done and it revealed inflammatory cell infiltrate predominantly of lymphocytes and eosinophilia with areas of fibrosis and plenty of necrotic areas suggestive of interstitial pneumonia. Another attempt post PET-CT image guided site localization revealed similar results; AFP, beta hcg and LDH were normal and so was the thyroid profile. thus, ruling out usual differentials for an anterior mediastinal mass that is thyroid mass, teratoma, thymoma and lymphoma. A diagnosis of **inflammatory pseudotumor** was considered and thus the patient was sent for thoracotomy after planning with CTVS department. The histopathological examination of the partially resected specimen came out be **high grade non-Hodgkin lymphoma** and the patient was put on chemotherapy after consultation with hematology department.

Study on Serum Procalcitonin and Serum C-reactive protein in pulmonary tuberculosis patients, and its association in a tertiary care hospital, Odisha.

Dr. Surjya Shankar Meher1, Dr. Srinibas Sahoo 2, Dr. Yera Dhanurdhar 3 ,
Dr. Sarat ku. Behera 4,Dr. Debaranjan Das5.

1PGT, 2Asst. Prof, 3 Asst. Prof, 4 Professor& HOD, 5PGT
P.G. Department of Respiratory Medicine, Hi-tech Medical College and Hospital, Bhubaneswar India.

Background: Pulmonary tuberculosis is a contagious bacterial infection that involves the lungs. Tuberculosis remains one of the world's deadliest infectious killers. Tuberculosis continues to be a public health concern worldwide. An estimated 10 million people got active TB worldwide as per WHO 2021.

Objectives: 1. Compared baseline characteristic and distribution of Sr. CRP Sr. procalcitonin for pulmonary TB.
2. To determine the Association between Sr. CRP and Sr.procalcitonin for pulmonary TB.

Methods: 50 (80%,male:20%,female, male:female 4:1) Adult Pulmonary Tuberculosis study participants were included from O.P.D. and I.P.D. in the P.G. department of Pulmonary, Hitech Medical College and Hospital, Bhubaneswar. Between Jan 2023 and July 2023 in a hospital based Descriptive and Cross-sectional study. Sr.CRP and Sr.Procalcitonin was determined by laboratory methods. We compared groups means using the Student's t test, and proportions using the Fischer Exact test, P values below 0.05 were regarded significant.

Results: The mean and standard deviation of age group (29.70 ± 6.75), with a range of 21-40 from female, and for male age (43.20 ± 11.88), with a range of 24-61. Sputum microscopy maximum number of cases from {1+,13(26%); 2+,25(50%); 3+,12(24%);} Hb(g/dl), TLC, CRP (mg/L), ESR, Sr. Procalcitonin were significantly associated with Pulmonary Tuberculosis ($p<0.001$). maximum number of Neutrophil 70, 13(26%), maximum number of Lymphocyte 28, 9(18%).

The correlation coefficient between CRP and Sputum microscopy=39.8%, p value 0.004, CRP and Sr. Procalcitonin =59.7%, p value 0.001, significantly positively correlated.

Conclusion: We conclude that the Serum C-reactive protein (CRP), Serum Procalcitonin (PCT) concentrations in the clinically diagnosed groups of the study subjects demonstrated highly significant. (as determined from P value) The correlation coefficient between CRP and Sputum microscopy=39.8%, p value 0.004, CRP and Sr. Procalcitonin =59.7%, p value 0.001, significantly positively correlated and there is a positive association among the CRP and Sr. Procalcitonin andCRP and Sputum microscopy for pulmonary Tuberculosis.

Key words: Pulmonary Tuberculosis, Serum C-reactive protein (CRP), Serum Procalcitonin (PCT).

A bad penny always turns up

Dr ABDUS SAMAD, junior resident (ACADEMIC) (2nd year), Department of respiratory medicine
College of medicine and sagore Dutta hospital, Kolkata- 700058, west Bengal

Background and Objectives: Adverse effects related to anti tubercular drugs are common. Some of them are rare but may be life-threatening. They are sometimes very difficult to identify and prove. Here we are reporting a case of rifampicin associated pancytopenia.

Case Study: A 30-years gentleman presented with fever, cough, weight loss, generalized lymphadenopathy, hepatosplenomegaly and bilateral pleural effusion. He was clinically diagnosed as disseminated TB and drug sensitive TB regime was started. He was referred to us as his condition deteriorated. His peripheral blood showed pancytopenia. Previously pleural fluid was straw color later it became haemorraghic and purpuric spot developed all over the body. We considered the diagnosis of lymphoma and planned to investigate him further and ATD was stopped.

FNAC and excision biopsy of cervical lymph-node confirmed TB by CBNAAT. Bone marrow examination showed reactive cellularity. We restarted ATD regimen with H, Z, L and E. patients condition improved gradually and follow-up blood count revert to normal.

Our final diagnosis was microbiologically confirmed disseminated TB with rifampicin induced pancytopenia.

Discussion: The diagnosis of rifampicin induced pancytopenia was confirmed by appearance of pancytopenia with rifampicin containing regime and disappearance of it after withdrawal of rifampicin. Rare side effects of rifampicin are like thrombocytopenia, leukopenia, DIC, haemolysis and flue like syndrome.

Conclusion: rifampicin induced pancytopenia is a rare complication that is very difficult to identify as it may be due to disease itself (bone marrow involvement). Early diagnosis and withdrawal of rifampicin is life-saving.

Key words: Disseminated TB, lymphoma, pancytopenia, rifampicin

The ghost of thy Christmas past

Author Information: Dr Monojit Mukherjee, 2nd year Junior Resident (academic)

Affiliation/Department: Department of Respiratory Medicine, College of Medicine and Sagore Dutta Hospital
Phone: 8910395120/9038361497 || Email: monojit708@gmail.com

Background: Sarcoidosis, a multisystemic disorder of unknown aetiology is a non-caseating granulomatous disease. Frequently it mimics tuberculosis.

Case report: A 50-year-old gentleman, without comorbidities presented with cough, scanty expectoration, malaise, fever and weight loss for 2 months. A nodular swelling on his left forearm, at the incision site of fracture repair (done 30 years back) also concerned him. A firm nodule, over a healed surgical scar was examined over the left forearm, anteriorly. FNAC from the site, done outside, suggested spindle-cell sarcoma. Systemic examination was normal. Investigations showed raised CRP; bilateral hilar enlargement on frontal chest radiograph. Sputum was negative for AFB and CBNAAT. Enlarged mediastinal, bilateral hilar and subcarinal lymph nodes were appreciated on CECT-thorax. Core needle biopsy from the left forearm swelling demonstrated non-caseating granuloma with multinucleated giant cells, negative for AFB stain and CBNAAT. Bronchoscopy revealed bilateral lower lobe endoluminal nodules. Biopsy from these nodules and TBNA from subcarinal lymph nodes proved non-caseating granuloma, negative for AFB, CBNAAT and malignancy. Diagnosed as pulmonary and cutaneous sarcoidosis oral steroids were introduced and improvement was observed at follow-up. Two months later, the patient had symptomatic relapse barring the arm swelling. Fresh CECT-thorax showed new onset consolidations in the left lung and micronodular opacities in the right middle and lower lobes. This time sputum turned positive for AFB, reconfirmed on CBNAAT, sensitive to rifampicin. In addition to oral steroids, anti-tubercular therapy was started. He improved on close follow-up and steroids were tapered over a period of 1 year.

Discussion: Sarcoidosis and tuberculosis often overlap and may co-exist. Diagnosis of the concurrence requires adequate clinical suspicion and close follow-up.

Conclusion: Sarcoidosis, which presented atypically, masquerading cutaneous spindle cell sarcoma coexisted with pulmonary tuberculosis. Histopathology, close follow-up, microscopy and CBNAAT proved essential for a complete diagnosis.

Keywords: CBNAAT, cutaneous sarcoidosis, non-caseating granuloma, pulmonary tuberculosis, pulmonary sarcoidosis, TBNA

Pulmonary Tuberculosis and Iron deficiency Anemia, in a tertiary care hospital, Odisha.

Dr. Debaranjan Das1, Dr. Srinibas Sahoo 2, Dr. Yera Dhanurdhar 3 ,
Dr. Sarat ku. Behera 4, Dr. Surjya Shankar Meher 5.

1PGT, 2Asst. Prof, 3Asst. Prof,4Professor & HOD, 5PGT

P.G. Department of Respiratory Medicine, Hi-tech Medical College and Hospital, Bhubaneswar India.

Background: Pulmonary tuberculosis is still a global health problem. Tuberculosis is infectious disease & burden on society, worldwide. WHO Tuberculosis (TB) is an airborne illness that induces systemic inflammation. A commonly associated comorbid condition in TB is anemia. A total of 1.6 million people died from TB in 2021. Pulmonary tuberculosis is associated with nutritional deficiency, hence association with Iron deficiency and anaemia is likely.

Objectives:

1. Prevalence of iron deficiency anemia in Pulmonary Tuberculosis
2. CRP as inflammatory marker in Pulmonary Tuberculosis to see the prevalence of Iron deficiency anaemia and association of CRP with it.

Methods: 52(19 female ad 33 male) adults Pulmonary Tuberculosis as study participants. Patients of PTB consenting for the prospective observational study were selected for estimates of Serum Iron, Sr.TIBC , Sr.Ferritin, Hb, TLC and CRP by Laboratory studies. These results werw statistically analysed. The study was conducted O.P.D. and I.P.D. in the P.G. department of Pulmonary, Hitech Medical College and Hospital, Bhubaneswar. Between Jan 2023 and July 2023.Study design: Hospital based Descriptive and Cross-sectional study.Study Population: Ready to participant to the study after consent form.Sample Size: 52.

Results : 52 patients (male: female) participated. The average range of 21-64 from female, and (52.51 ± 14.90), with a range of 28-85 from male . sputum microscopy maximum number of cases from 1+,23(44.2%), Hb (g/dl), TLC, CRP (mg/L), Sr Iron (ug/dl), Sr Ferritin (ng/ml), Sr TIBC (ug/dl)were significantly associated with Pulmonary Tuberculosis ($p<0.001$).maximum number of Neutrophil 70, 18(34.6%), maximum number of Lymphocyte 28, 13(25.0%).

The correlation coefficient between Hb and Sr. Iron r=64.3%, $p<0.001$, Sr Iron and Transferrin Saturation r=61%, $p < 0.001$,the correlation coefficient between CRP and Sputum microscopy=56.7%, $p < 0.001$, significantly positively correlated.

Conclusion: In present study we observed that, Iron deficiency Anaemia is commonly associated with tuberculosis and needs to be taken care of. Pulmonary tuberculosis patients and anaemia require iron supplementation.

Key words: Pulmonary Tuberculosis, Anemia, Iron deficiency, Ferritin.

Lung cancer risk in relation to blood cholesterol profile: a meta-analysis of prospective cohort studies

Anindita Bhattacharya, Praphulla Chandra Shukla, Koel Chaudhury

School of Medical Science and Technology, Indian Institute of Technology Kharagpur, Kharagpur 721302, India

Background: Epidemiologic research addressing the causal relationship between blood cholesterol levels and lung cancer (LC) has produced inconsistent, and hence inconclusive, results. The present meta-analysis was carried out to assess the association between different blood cholesterol components, namely total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), and low-density lipoprotein cholesterol (LDL-C), and the risk of LC taking into consideration all relevant prospective cohort studies.

Methods: Four databases (PubMed, Scopus, Web of Science, and Cochrane Library) were systematically searched until July 2023 to identify potentially relevant articles. This meta-analysis includes articles that report hazard ratio (HR) with a 95% confidence interval (CI) for the highest versus lowest categories of at least one of the blood cholesterol components (TC, HDL-C, or LDL-C) or sufficient data to calculate the same in relation to the risk of LC.

Results: Based on the eligibility criteria, a total of 11 prospective cohort studies with 2,154,411 participants and 20,965 LC cases were included. The primary analysis revealed an inverse association between all three blood cholesterol components and the risk of LC; however, only HDL-C exhibited statistical significance (relative risk, RR = 0.86, 95% CI: 0.78-0.95).

Conclusions: According to the findings, only HDL-C and not TC or LDL-C appear to have a significant inverse association with the risk of LC. To ascertain the true causal role of blood cholesterol profile in the etiology of LC, future prospective cohort studies with adequate control for confounding and preclinical bias are warranted.

Bronchioloalveolar Carcinoma

Dr. Loitongbam Renuka Devi

Bronchioloalveolar carcinoma (BAC) is a relatively rare adenocarcinoma that accounts for 2.6 - 4.3% of lung cancers. It is a type of non small cell lung cancer (NSCLC) which is more common in women, non smokers & Asians. It typically arises in the lung periphery & grows along alveolar walls without destroying the lung parenchyma. Because the parenchyma is preserved & BAC may arise simultaneously in multiple lobes, chest radiograph & symptoms may be indistinguishable from pneumonia or non infectious inflammatory processes. Only cytology or biopsy can help with a proper diagnosis. Survival rates vary depending on the stage of cancer but generally survival rate for BAC is much better than other forms of NSCLC when diagnosed early. Here, we are discussing a case of bronchioloalveolar carcinoma diagnosed by transthoracic needle aspiration. With the correct diagnosis, patient is currently on chemotherapy with improvement in clinical manifestations.

Key words : Bronchioloalveolar carcinoma, Non small cell lung cancer, transthoracic needle biopsy.

Rational Use of Anti-Allergy Medications

Author: Dr Shambo S Samajdar MD DM (Clinical Pharmacology) DAAI (AAAAI) Fellowship Respiratory and Critical Care (WBUHS) PG Dip Endo and Diabetes (RCP)

Affiliation: Diabetes and Allergy-Asthma Therapeutics Specialty Clinic, Kolkata

Abstract: Anti-allergy medications are a vital category of pharmaceuticals designed to provide relief, control, and prevention of allergic symptoms. In this abstract, we will delve into the world of anti-allergy medication, with a specific focus on the anti-histamine group of drugs and their rational use. Histamine, a naturally occurring biogenic amine, plays a pivotal role as a key participant in acute allergic reactions and serves as a significant modulator of stomach acid production. However, recent times have witnessed an emerging recognition of histamine's significance as a modulator of neurotransmitter release in both the central and peripheral nervous systems.

To gain a deeper understanding of the therapeutic implications of anti-histamines, it is essential to explore the identification and cloning of four histamine receptors, along with the subsequent development of receptor antagonists unique to each subtype. These advancements have significantly expanded our comprehension of the physiological and pathological functions of histamine. Therapeutically, competitive antagonists targeting H1 receptors have found widespread use in the treatment of various conditions, including allergies, urticaria, anaphylactic responses, nausea, motion sickness, and insomnia. Furthermore, the efficacy of H2 receptor antagonists in reducing stomach acid output has been well-established, making them essential in managing gastric disorders. It's worth noting that all H1 receptor "antagonists" currently available are, in fact, inverse agonists. These inverse agonists work by diminishing the constitutive activity of the receptor while competing with histamine for binding to the receptor.

In the realm of H1 antagonists, it's essential to consider their pharmacokinetics and potential interactions. These drugs are efficiently absorbed through the gastrointestinal system, typically taking 1 to 3 hours to reach peak plasma concentrations. First-generation H1 antagonists offer relief for approximately 4 to 6 hours, while second-generation ones exhibit extended durations of action. Interestingly, some H1 antagonists, can provide prolonged inhibition of allergic reactions in the skin, lasting up to 36 hours or even persisting for a week after discontinuation in consistent users. Metabolism of these drugs primarily occurs through cytochrome P450 enzymes, with exceptions like cetirizine and acrivastine, which undergo less than 40% metabolism. Differences in metabolism among individuals, especially in children and those with liver disease, can affect drug interactions. Notably, some second-

generation H1 antagonists, such as terfenadine and astemizole, were removed from the market due to their potential to induce life-threatening arrhythmias when metabolism was impaired. These insights into H1 antagonist pharmacokinetics and interactions are crucial for safe and effective clinical use. Understanding the side effects associated with first-generation antihistamines (AHs) is crucial for informed medical decision-making. These drugs often lead to CNS suppression, causing sedation, reduced sleep quality, and impaired cognitive performance. Moreover, their strong sedative properties, rather than improving sleep, can lead to poor sleep patterns and even hinder school performance. Additionally, first-generation AHs have been linked to accidents, including those involving cars, planes, and boats, due to their sedative effects. Furthermore, these AHs have a potential for abuse and toxicity, with overdose symptoms encompassing a range of anticholinergic effects and, in children, paradoxical excitation followed by respiratory depression and coma. Importantly, some first-generation AHs like hydroxyzine can elevate the risk of QT prolongation and torsade de pointes, which can have serious cardiac consequences. In contrast, newer generation AHs have shown minimal safety concerns, with no fatalities directly attributed to their use, even in cases of accidental ingestion at significantly higher doses. Although two second-generation AHs were previously associated with cardiac toxicity, they were removed from the market over two decades ago, reinforcing the improved safety profile of newer AH options.

Prescribing antihistamines requires careful consideration of various factors, including the patient's medical condition and stage of life. In cases of renal insufficiency, newer generation antihistamines like bilastine, ebastine, and fexofenadine can be safely administered, while desloratadine and levocetirizine are better avoided, with a need for dose adjustment in the latter when eGFR is <10ml/min. When it comes to liver failure, bilastine, desloratadine, levocetirizine, and fexofenadine generally do not necessitate dose adjustment. Still, ebastine should be limited to 10 mg in patients with compromised liver function, and mizolastine should be avoided. During pregnancy, the choice of antihistamines should consider their FDA classification, with some like cetirizine, loratadine, ebastine, levocetirizine, desloratadine, rupatadine, and bilastine considered safe due to their lack of teratogenicity in animal studies. In the geriatric population, the use of first-generation antihistamines should be avoided due to their anticholinergic and other adverse effects, while second-generation antihistamines offer a safer option with a better risk-benefit profile. For children, second-generation antihistamines like cetirizine, levocetirizine, loratadine, desloratadine, ebastine, and fexofenadine have been extensively studied and are considered safer choices. Finally, in breastfeeding mothers, the lipid solubility and ionization of antihistamines can affect their transfer to breast milk, with drugs like loratadine/desloratadine and fexofenadine showing minimal exposure to breastfed infants. These considerations help guide the safe and effective use of antihistamines across various patient demographics and clinical scenarios.

To summarize the key takeaways:

1. Caution with First-Generation AHs: First-generation antihistamines should not be the first-line treatment for allergic diseases due to their potential for severe adverse effects, including fatalities.
2. Preventing Fatal Injuries: Avoiding First-Generation AHs is crucial to prevent fatal injuries, as the extent of central nervous system impairment they cause is often underestimated by prescribers.
3. Geriatric Prescribing: When prescribing antihistamines to the geriatric population, it's essential to assess the risk of anticholinergic burden, as determined by the ACB score.
4. Advantages of Newer Generation AHs: Newer generation antihistamines are safer, offer faster onset of action, and demonstrate superior potency and efficacy compared to their first-generation counterparts.
5. Enhancing Awareness: It's imperative to disseminate this valuable information to healthcare providers and patients alike to drive changes in practice and improve patient health and safety.

Further Reading:

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Indian Guidelines for Diagnosis of Respiratory Allergy: Silent Points for Practitioner

Dr. Raj Kumar

The guidelines for diagnosis of respiratory allergy in India was developed by the Department of Pulmonary Medicine, Vallabhbhai Patel Chest Institute, Delhi and was duly endorsed by Indian College of Allergy, Asthma and Applied Immunology (ICAAI), South Asia Association of Allergy, Asthma and Clinical Immunology (SAAAACI), and National Centre of Respiratory Allergy, Asthma and Immunology (NCRAAI). This guideline ensures consistency in decision-making, communication, and behavior across individuals, organizations, and industries by providing a structured and standardized approach to performing tasks.

This guideline was developed by an extensive initial review done by the experts in the field from all over the country along with the review of the literature was done by searching the electronic databases PubMed, Medline, Google scholar, Science direct, Cochrane and relevant national and international guidelines, in particular the Indian studies were reviewed to make consensus, easy to understand and simple recommendations. The search was conducted under three subgroups: (a) history taking and examination, (b) allergens in respiratory allergy, and (c) diagnostic testing (in vivo and in vitro). Relevant questions were framed on the basis of discussions with reference to the Indian context. The analysis of evidence and discussions regarding level of evidence and recommendations were held in individual group sessions. Final decisions were based on a consensus approach. The conclusion of the guideline was to take the allergic history in detail followed by the allergy test by Skin Prick Test with the relevant allergen and to interpret the result of the test is association with the history of the patient, before levelling the patient to be allergic to the particular allergen.

Raj Kumar, AB Singh, SN Gaur, MK Aggarwal et al. Indian Guidelines for Diagnosis of Respiratory Allergy. Ind J Chest Dis All. Sciences , 63(4) 2021: 225-348

Immunotherapy for Asthma: When and How

Dr. Raj Kumar

Allergen immunotherapy (AIT) is a treatment involving the administration of increasing doses of clinically relevant allergens to patients who have allergic disease. Allergen immunotherapy is used as a class of therapies that aim to induce immune tolerance to allergens. It is the only method to prevent the onset/progression of asthma in patients suffering from allergic rhinitis/rhinoconjunctivitis. AIT can be administered via different route (i.e. subcutaneous, sublingual, oral, nasal, bronchial and lymphatic) but currently only subcutaneous immunotherapy (SCIT) and sublingual immunotherapy (SLIT) have sufficient evidence and therefore are routinely used.

SCIT is a treatment for allergies that involves injecting small amounts of allergens under the skin. It helps reduce allergic symptoms over time. It is involving repeated injection of the allergen at regular intervals and is effective in allergic rhino-conjunctivitis with clear-cut allergens such as pollens, mites, and animal dander. SCIT is generally continued every 4–8 weeks for a period of 3–5 years.

SLIT is a treatment for allergies that involves placing allergen extracts under the tongue. It helps reduce allergic symptoms over time, similar as SCIT. It is an alternative way to treat allergies without injections has been proved for allergens such as grass pollen and house dust mite.

SILICOSIS

Dr. M L Gupta

- Silicosis is a worldwide problem. Despite of extensive use of silica, the incidence of silicosis has declined in developed countries due to effective preventive measures. Developing nations are facing epidemic of this disease due to accelerated construction activities / poor preventive measures.
- Depending upon the intensity and duration of the exposure, individual can have either of chronic, subacute or acute silicosis. Acute silicosis is symptomatic from the start of the illness and carries worse prognosis while chronic silicosis is usually asymptomatic unless complicated by PMF/TB/ malignancy/COPD.
- Repercussions of respirable silica are not only limited to silicosis only, a variety of other diseases like collagen tissue disorders, malignancy, tuberculosis, renal failure, sarcoidosis, chronic obstructive airway disease have also been reported.
- A good history with typical radiology is often sufficient for the diagnosis. In situations of atypical presentation histopathological correlation may be required.
- Exposure to silica is associated with spectrum of pulmonary and non-pulmonary diseases.
- As there is no proven therapy, avoidance is the best prevention. No preventive measure is full proof.

ADULT VACCINATION- PRESENT AND FUTURE

Dr. Sivaresmi Unnithan

As pulmonologists, we come across a great many patients with chronic lung diseases, mostly in their waning years with waning immunity [immunosenescence] and inflammaging [subclinical inflammation to microbiological insults]. We devote most of our clinical energy on treating the infections and the ensuing complications in our patients and very often forget the adage 'prevention is better than cure'.

Our country woke up to universal vaccination very recently with nationalization of vaccination from 1978. Therefore our adults above 50 years do not have the 'Herd immunity' for most of the preventable infectious diseases as those of the western countries do. Moreover we have almost 20% of our population who are above the age of 55 years and that makes a sizeable number of individuals with reduced immunity and increased susceptibility to microbial infections and worsening of their preexisting comorbidities.

It is time for all health care workers to be collectively prompt about creating awareness of adult vaccination in the largely ignorant society. Several medical organisations have incorporated and advocated adult vaccination but we are very far away from having it incorporated in the national immunization schedule. Policy makers and politicians need to be mobilized in the same direction for effective implementation, ensuring affordability and availability of the presently expensive vaccines.

The present contemptible percentage of vaccinated adults in India is the product of lack of awareness among both patients and the health care workers, denial, lack of convenient infrastructure and financial support.

The vaccines advocated for adults are Influenza, Pneumococcal, Herpes zoster [shingles], Hepatitis A and B, DPT, HPV, MMR, Typhoid, Varicella, Meningococcus and Japanese encephalitis. Most of them are available but sparsely and in private centres.

Fortunately we pulmonologists have been working hard on the Influenza and pneumococcal vaccines for our patients and have gathered a decent momentum but we do have a long way to go.

Algorithm approach of interpretation presentation of HRCT for DPLD

Dr. Parthasarathi Bhattacharyya

HRCT image is a reflection of the underlying pathology of lungs in ILD. The interpretation of HRCT can lead to an information related to diagnosis, etiological clues, possible treatment response, and even prognosis.

Although it cannot substitute many investigations, HRCT chest can guide to evaluate towards a rational conclusion and can help to identify the indicated subjects for MDD (multi-disciplinary discussion) and tissue acquisition (Bx) for diagnosis.

The fascinating world of HRCT interpretation is, thus immensely important in DPLD. An outline of the job will be presented at Pulmocon '23

Control of silicosis and silicotuberculosis using a novel biomarker, CC-16

Dr. Kamalesh Sarkar

Biomarkers are often proved to be an essential component for public health activities such as control of diseases of public health importance. In this article, club cell protein 16 or CC-16 has been described as a biomarker to evaluate silicotic lung damage by using it as a screening tool for early detection of silicosis and silicotuberculosis. Research carried out by the Indian Council of Medical Research – National Institute of Occupational Health (ICMR-NIOH) had conclusively evidenced that CC-16 (a lung protein) is inversely related to the extent of lung damage among the occupational-inhalational silica dust exposed workers; higher the exposure along with higher silicotic lung damage, more is the decline of serum CC-16 level. Public health scientists have suggested for using it as a proxy biomarker and screening tool for the early detection of silicosis and silicotuberculosis through a suitably designed point-of-care serum CC-16 test device and initiating a national silicosis control program. They have also evidenced that unless silicosis is controlled, elimination of tuberculosis is not possible in our country (which is mandated by the Government of India by 2025) as India has a huge burden of silicosis and silicotic subjects are highly vulnerable to lung tuberculosis due to progressive decline of their lung immunity. So, early detection of silicosis and silicotuberculosis along with required intervention are absolutely necessary to achieve the elimination of tuberculosis in our country. The biomarker, CC-16 might play an important role towards that if a point-of-care and user friendly device is made for detection of serum CC-16 level. National TB Elimination activities are also required to be integrated with national silicosis elimination activities in India.

CTD – ILD Evaluation – the Science and the Art

Dr Shounak Ghosh

The causes of Interstitial Lung Disease (ILD) can vary from different exposures to an underlying autoimmune process. While a subset of cases may be labelled as "Idiopathic", an interesting proportion of cases can be defined as "Connective Tissue Disorder-associated", or CTD-ILD. Patients with CTD-ILD often have features of an underlying CTD like an obvious organ involvement (joint swelling, photosensitive rash, muscle weakness, renal involvement, or serositis). The first step for evaluating any case with ILD would be to search for an underlying cause, as immunomodulators have a definite role in these cases. Proper history taking and systemic examination can reveal features of a CTD (e.g.: symmetric polyarthritis denoting Rheumatoid Arthritis (RA), or skin tightening depicting Systemic Sclerosis (SSc)). Looking beyond the realms of pulmonary involvement can point us towards the cause. Further evaluation from an immunologic perspective often relies on serologic testing.

Rheumatoid Factor or Anti-CCP positivity can cause a higher disease burden and greater chances of pulmonary involvement in RA. Anti-Scl 70 positive scleroderma is expected to have a greater chance of progressive ILD, while anti-Centromere positive disease may not. A host of autoantibodies called "Anti-synthetases" may be responsible for rapidly progressive ILD with a dermatomyositis phenotype. However, interpreting antibody positivity correctly is very important. Seropositivity cannot, by itself, be diagnostic of a condition. The chances of mere association must be kept in mind in the absence of a clear disease course. The rate of progression of ILD and the timing of evaluation is crucial. Detecting ILD early in CTD patients can lead to disease control using immunomodulators, while a delay in diagnosis can cause partially irreversible lung damage. Choosing an HRCT scan of the thorax with a pulmonary function test (PFT) is essential at baseline and for an annual follow-up. Imaging findings can, to a certain extent, delineate the extent and progress of ILD.

While evaluating cases of CTD-ILD, causes of dyspnoea other than parenchymal lung disease have to be sought out. Muscle weakness, diaphragmatic weakness, pleural disease, and pulmonary hypertension may all cause dyspnoea, and have to be investigated and addressed. A new but relatively controversial term was coined by the ERS/ATS in 2015, called "IPAF" (Interstitial Pneumonia with Autoimmune

Features). This refers to a case of ILD with a few autoimmune features, but not enough to classify as any particular CTD. This may be considered somewhere between idiopathic pulmonary fibrosis (IPF) at one end of the spectrum, and CTD-ILD at the other. Proper monitoring of these patients can unmask an underlying autoimmune disease over time.

Finally, evaluation is an essential part of the follow-up of every CTD-ILD case, where the response to therapy or the need for antifibrotics can be estimated. The rate of fall in forced vital capacity (FVC), regular monitoring of pulmonary pressures, and the extent of ILD on imaging, are all part of the major clinical trials as well as routine practice.

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Basic Pathophysiology of Allergy

Dr Saibal Moitra

Allergy is an immune dysregulation. The disease encompasses loss of immune tolerance towards innocuous environmental antigens resulting in unwanted inflammatory response in tissues. This unwanted inflammatory response stems from the activation of T lymphocytes. The specific immune deviation which occurs in an allergic response is formation of Th2 cells from CD4+ T cells upon activation by dendritic cells with cognate signals. The effector Th2 cells releases the cytokines like IL-4, IL-5, IL-13 which has multiple functions namely, directing the B cells to undergo class switching of antibodies from IgM to IgE and produce allergen specific IgE, attracting, activating and increasing the survival of eosinophils in the particular tissues, and increased mucin secretion in the airways. The IgE further binds to the IgE receptors on the mast cells, basophils, macrophages. Further binding of the allergy causing antigen, called allergen, to its receptors on mast cells and basophils results in the cross-linking of the receptors and causes a coupling reaction which by various intracellular signaling pathways results in degranulation of the mast cells granules and also activates the synthesis of the arachidonic pathway proteins. The release of these mediators results in increase in vascular permeability and typical wheal and flare response which is the characteristic of Type I hypersensitivity reaction. Nowadays we know that this specific kind of activation of the adaptive immune system is orchestrated by the innate immune system. The particular chemical signals produced by the epithelial cells in response to the allergens (which has biological activity) induces specific response in the Antigen presenting cells by Toll like receptors signaling which directs the naïve CD4+ T cells to form Th2 cells and have a Th2 immune response in allergy. Moreover, the particular response of the epithelial cells to the environmental antigens occurs due to specific kind of genes present in multiple chromosomes. Many of the allergy potentiating genes have been characterized which actually express proteins which are important cell signaling molecules, interleukins, cytokines and chemokines. Thus, allergy is a disorder which manifests because of specific gene-environment interactions. These interactions are fine tuned by our microbiota, diet, environment encompassing the entire human being in close interaction with everything around which is now collectively called holobiont.

Treating asthma in adult – where we stand

Dr. Supriya Sarkar
Professor and Head
Department of Respiratory Medicine
College of Medicine and Sagore Dutta Hospital
Kolkata – 700058

Introduction: Goals in the management of asthma include to achieve good symptom control (both day time as well as nocturnal symptoms) leading to near normal life; to reduce future risk of asthma related mortality, airflow limitation and side effects of treatment; to reduce the incidence of exacerbation and the use of oral corticosteroid (CS). We can divide asthma management into diagnosis; identification of comorbidities and the risk factors for exacerbation and causes of non-response to treatment; patient education and proper therapy as per guidelines. There may be discordance between symptoms and risk of exacerbation; and on the other hand, between the physician's goal of management and the patient's goal.

Patient education: It is the most important but most neglected subject. When patients were told about the diagnosis following questions come to their mind and those questions must be answered to their satisfaction. Questions are basically on asthma and its social stigma that make them accepting the diagnosis difficult, curability of disease, role of corticosteroids, inhaler addiction, duration of treatment, etc. So, physician must educate patients regarding inhaler therapy, continuing treatment despite absence of symptoms, life style modification, cessation of smoking, reducing weight etc. Patients must be educated about allergens and how to reduce their exposure. It should be remembered that drug compliance does not depend on age, sex, educational status, marital status, socioeconomic condition, ethnicity and geography.

Management of asthma: Commonly used medicines in asthma are short acting and long-acting beta-2 agonists (SABA and LABA), anti-cholinergic (LAMA), inhaled CS (ICS) and leukotriene modifiers (montelukast). Medicines are used through inhaler devices mainly to prevent side effects. Dry powder inhaler (DPI) has the problems mainly they require adequate negative pressure generation and

hygroscopic effect of drug particles. Pressurized meter dose inhaler (pMDI) is difficult to use and it needs repeated demonstration. MDI with spacer is the device of choice in asthma, particularly in children, elderly, debilitated patients and while using medium to high dose ICS. Medium dose and high dose ICS are budesonide > 400 to 800 µmg and > 800 µmg, respectively or equivalent ICS. Combinations of medicines are used as inhaler that commonly include an ICS with either LABA or SABA. Formoterol is a preferable bronchodilator as though it is a long-acting drug (up to 12 h) it has a rapid onset of action (within 2-3 minutes).

Global initiative for asthma (GINA) guideline: GINA is an evidence-based guideline that is reviewed every year. Recently, few definitions have been changed. The terminology controller has been replaced by maintenance treatment (treatment prescribed for use on every day or on a regular schedule basis). The new terminology AIR (Anti-inflammatory reliever) means reliever that contain both low dose ICS and formoterol or SABA. MART/ SMART means the same combination of inhaler used for maintenance and reliever treatment.

In ZINA two tracks of treatment have been recommended: i) Track 1, where 'ICS Formoterol combination' is used as reliever' and ii) Track 2, where 'as needed SABA or ICS-SABA' is used as reliever. In step 1 & 2 management, ICS-Formoterol is used in track 1 regime as the combination reduces exacerbation risk, emergency visits, hospitalization or mortality by 2/3rd compared with SABA only and also reduce the use of oral CS; though symptomatic relief is lesser. In track-2 regime low dose ICS + as needed SABA is used as it is highly effective in managing asthma symptoms, reduce exacerbation and hospitalization. SABA alone is not at all recommended and ICS should be used in regular daily dose or when SABA is used.

Step up therapy is a new introduction in ZINA. If the patient is not improving then the first step is 'TO REVIEW' the case, particularly symptom, comorbidity, drug side effect and lung function. The next step is 'TO ASSESS', particularly the diagnosis and inhaler technique, spirometry and asthma control questionnaires (ACQs). The final step is 'TO ADJUST', particularly adjusting the doses of ICS, the removal of risk factors, treatment of comorbidities and non-pharmacological management. Consider stepping up after going through those steps. Step up include medium to high dose ICS and addition of LAMA. Even then if patient's condition does not improve then to consider phenotyping and to consider starting biologic therapy.

Predictor of high risk of exacerbation include high SABA use; other medical conditions like obesity, rhinosinusitis, gastro-esophageal reflux disease (GERD), food allergy, pregnancy, obesity, smoking; continued allergy exposure, air-pollution, psycho-social factors; FEV1 < 60% predicted, high bronchodilator reversibility; high blood eosinophil, elevated HFNO; and past history of intubation, ICU admission, > 1 severe exacerbation in last 12 months.

Comorbidities those can influence the disease process and sometimes mimics asthma include rhinitis, rhinosinusitis, upper airway cough syndrome; GERD, vocal cord dysfunction, obesity, obstructive sleep apnea (OSA), depression/ anxiety, hypersensitivity pneumonitis and left ventricular failure.

Difficult to treat asthma are mostly due to wrong diagnosis, poor inhaler technique, poor adherence to treatment, continuous exposure to allergens and multi-morbidities. Confirmation of the diagnosis should be done first by excluding asthma mimics (upper airway cough syndrome; GERD, vocal cord dysfunction, hypersensitivity pneumonitis, left ventricular failure and COPD). Those steps can effectively manage more than 95% of difficult asthma.

Conclusion: Asthma management mainly depends on inhaler therapy with ICS and LABA/ SABA combination. Patient education is the key of success in asthma management, particularly inhaler techniques, adherence to treatment, need for use of ICS, removal of allergens and identification of danger signals. We should facilitate asthma patients for living a normal life.

Education, training, career and ethics : Getting the balance right

Dr. Dhiman Ganguly

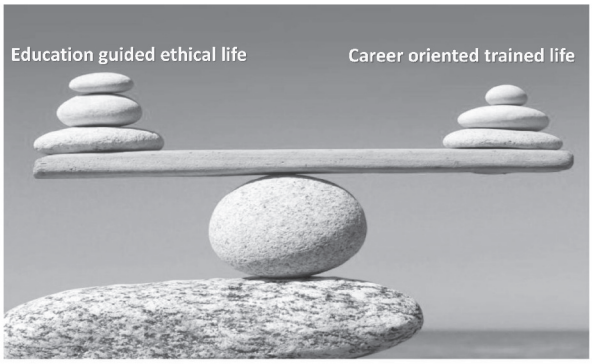
EDUCATION, TRAINING, CAREER
&
ETHICS

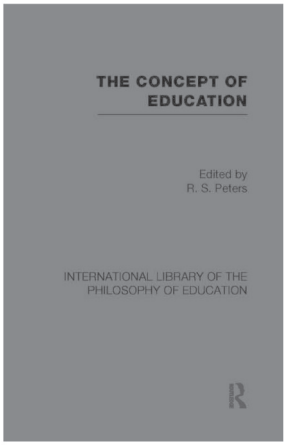
- Getting the balance right

Mankind

- Life is inherently uncertain
- Pursuit of happiness

THE BALANCE



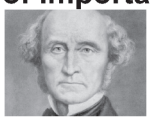


Richard Stanley Peters (1919 -2011)

".. To be educated is not to have arrived, but to travel with a different view "

EDUCATION

It is really of importance , not only what men can do, but also what manner of men they are , that do it. Among the works of men, which human life is rightly involved in perfecting and beautifying , the first of importance , is the man himself



John Stuart Mill (1806-1873)
"On liberty"

EDUCATION & TRAINING

- Sa Vidya Ya Vimuktaye
- Educated - to have a broad perspective, should touch the student at a personal level.
- Training - narrow focus ("vocational" qualification)
- Educational process should be valuable as an end in itself , not because it enables somebody to do something else.
- We talk of students being "trained" to be doctors, rather than being "educated" in medicine

EDUCATION & TRAINING

- Training – trained "in what " or "trained to do what"
- Vocational qualification

But these questions do not fit the educational process.

The Curriculum

J Med Ethics: Medical Humanities 2000;26:23–30

The humanities in medical education: context, outcomes and structures

Jane Macnaughton University of Durham, Durham

Abstract
There is now a context for teaching humanities in undergraduate medical education via special study modules (SSMs). This paper discusses the instrumental and non-instrumental role of the humanities in the education of doctors. Three courses are then described and compared. The most successful of the three is a SSM which had the following characteristics: it was voluntary, it was an integral part of the curriculum, and it was examinable.

are summarised in figure 1. It is clear that doctors need to understand their patients through a scientific knowledge of how the body works and to appreciate how scientific research can help them to make decisions about the best treatment for their patients. But this scientific approach needs to be modified in the clinical situation when dealing with the individual patient. A "humane" doctor is required, with the understanding, assisted by interpretative ability and insight, and governed by ethical sensitivity, to apply this scientific evidence

EDUCATION & TRAINING

Qualitative difference

Changes our way of interpreting what we see, hear or feel with our sense organs.

HUMANITIES IN MEDICAL CURRICULUM

Introduction to

- **Problematic life situations – and how individuals respond to it.**
- **Some of the great thinkers - making them consider different ways of perceiving the world**
- **Improving their quality as a human being**

The Curriculum

GENERAL MEDICAL COUNCIL

Tomorrow's doctors - 1993

- Greater focus on education
- The good doctor, must be an educated doctor and this is one of the major areas ***where arts and humanities subjects might make a contribution***.

Medical Council of India

"Competency based curriculum for the Indian Medical Graduate"

Includes a course call "Attitude Ethics and Communication (AETCOM) which will run across years"

Choice of "elective" subjects.

The Curriculum

JRD TATA
President of the court
Indian Institute of Science
(1955-1993)

It has been said that , education is what makes a man ..... men and women pursuing advanced studies in our institute.... little time or opportunity to expose themselves to literature, arts, drama, poetry, music , history , philosophy, which though unconnected to their study or research work are *essential elements in the make-up of civilized educated person.... as Jamsetji Tata had in mind.*

CAMBODIAN CHILDREN'S FUND

Scott Neeson

What a career !

ETHICS

- **Moral principles governing or influencing conduct**
- **Unselfishness**

Scott Neeson

Born – 1961 , Edinburg Scotland
Poor family
1966 – Emigrated to Australia
Mother – Cleaner in a school
Father – Defence establishment

Scott went to school and dropped out of school at the age of 17 without a school leaving certificate.

Drive – in- Cinema company operator

Film promoter – film buyer –
Managing director of distribution arm of 20th Century Fox – 1986
Emigrated to USA Los Angeles – 1993
Vice President of International Marketing of 20th Century Fox.
10 years later President of 20th Century Fox International

ETHICS

- **Selfishness is a basic instinct – most of the time.**
- **Being principled**
  - **Sticking to convictions**
  - **Not being prejudiced**

TO SUMMARIZE

The eternal problem

- **"There is no doubt that unselfishness pays in the long run, but the problem is that we do not have the patience to practice it."**
- **Selfishness pays me right now !!**

Be the well wisher of the Institute of Pulmocare & Research

Dear Sir/ Madam,

The institute of Pulmocare and research is striving hard and is poised to grow on its motto of research, education, and patient care. It has already marked its existence with a host of worthwhile activities.

Now, it is our pleasure to invite you to kindly be a well wisher of the Institute. We would treat your guidance, support, and patronage as our strength without keeping you in financial involvement and bothering you with administrative functioning.

The institute will post its developments periodically to you to seek your guidance and support. It will try to offer its products and services to you in a privileged way.

Your nurturing and patronizing this infant institute will be totally at your kind desire and discretions.

Please fill up the prescribed proforma to be one of our revered well wisher.

Name : .....

Age/Sex : ..... Date of birth : .....

Educational qualification and expertise : .....

.....

Profession : .....

Address : .....

.....

House No : ..... Street : .....

City : ..... Police Station : .....

Pin code : ..... Country : .....

Phone : ..... Mobile : .....

Email : .....