Orations

CHINTALA SITA DEVI ORATION

Biography

Dr Chintala Sita Devi served in the Andhra Pradesh Medical Services for over 30 years and retired as principal and head of the Department of Biochemistry, Andhra Medical College, Visakhapatnam, Andhra Pradesh, India. She is a fellow of NAMS, ACBI, AMBI, and founder fellow of the International Medical Sciences Academy. She worked at the University of Minnesota on TCM fellowship for 1 year (1961–1962). She received the World Health Organization fellowship for 1 year (1971–1972) when she worked in Sarafimer Hospital of Karolinska Institute, Stockholm. She has published 52 papers in national and international journals. Her work on scorpion venom, dracunculiasis, and lipids was quoted in foreign textbooks. She received the B.C. Roy Award under eminent Medical Teacher's category. She received meritorious teacher's award of Andhra Pradesh in 1983. She was honored as eminent women scientist 2004 by the Academy of Sciences Technology and Communications. She was awarded Emeritus professorship by NAMS, New Delhi, in the year 2005. She served as a member of the National Technical Committee of NABL, member of Andhra Pradesh Medical Council (1997–2001). She also served as president of CBI (1980) and AMBI (1993–1994). After retirement, she worked as a consultant in laboratory services of various hospitals like CDR, CARE Hospital, Banjara Hills, and ELBIT Medical Diagnostics, Hyderabad.

Challenges in Biochemistry Teaching for Indian Medical Graduate

Dr Bharti Kawatra Uppal

A teacher educates the child. What is education? As quoted by Swami Vivekananda, "Education is the manifestation of the perfection already in man," whereas the Father of our nation Mahatma Gandhi had said that education meant an all-round improvement, drawing out of the best in man. The word "Education" has been derived from different Latin words, which mean to bring out, nourish by act of teaching or training.

The word "shiksha" is derived from the Sanskrit "shas," which means to discipline, control, instruct, and teach. And "vidya" in Sanskrit means "to know." Vidya is thus the subject matter of knowledge.

Medical education is not far away from these meanings. Back in the 1500s, the word education meant "the raising of children," but it also meant "the training of animals." But the present millennium says that education has come to mean either "teaching" or "the process of acquiring knowledge"; the animal trainer part of the trainer has to be forgotten.

With VISION 2015 the Indian Medical Graduate needs to be educated not only to serve the community as the primary healer but also to be fully prepared to be aware of the scenario at international levels.

Keeping this in mind, there are lots of challenges faced by teachers to teach the undergraduates and postgraduates to formulate curricula and teaching modalities, and be a facilitator to bring in the appropriate knowledge into their students so as to make them a holistic individual and utilize their knowledge for the best interest of the patient.

AJIT SINGH SAINI ORATION

Biography

Dr Ajit Singh Saini was born in the small village of Gande Pindi in Punjab on March 10, 1934. After a brilliant undergraduate career, he did his MBBS from the Government Medical College and Hospital, Amritsar, Punjab, India. During those days when people would think of joining any clinical branch of medicine, he voluntarily chose to pursue MSc biochemistry followed by a doctorate from Nagpur University, Maharashtra, India, where he topped with distinction. He served in various capacities as a teacher in various medical institutes before joining as professor and head of biochemistry in the Government Medical College and Hospital, Rohtak, Haryana, India, way back in 1972 in which year he also completed his PhD. His original work on chromatography found reference in many textbooks.

Later, he rose to become director of the same institute besides being the founder director of the Maharaja Agrasen Institute of Medical Research and Education, Agroha, Haryana, India. He also remained president of the AMBI in 1994 to 1995.

He was an excellent teacher still fondly remembered by his students and a research worker par excellence with over 140 publications and two textbooks in biochemistry to his credit. He has guided many MD and PhD students of biochemistry and various other faculties in medicine for more than two decades.

He left for his heavenly abode on December 22, 2003. This oration has been started in the everlasting memory of Dr AS Saini as a tribute to his contribution to medical biochemistry and his other qualities of head and heart, which endeared him to one and all.

Travel through Time in Clinical Biochemistry: A Personal Experience of 33 Years

Dr Shanthi Naidu Kamatham
Consultant Clinical Biochemist and Head, Department of Laboratory Medicine, Care Hospital, Hyderabad

Most of us in this specialty know and realize that the journey is not always smooth but seniors, will, by their own experience, know that how and where we started is entirely different from where we are now. A path with many obstacles is but still a path to tread on.

Have there been challenges? Yes! All through, the field of clinical biochemistry has indeed been a challenge. Where else will we get an exposure to clinical medicine as a whole, basic sciences, chemistry and physics, mathematics, and statistics, to mention a few fields.

Are we in a closed chamber? Never! We are a pivot in understanding diagnosis and prognosis of any number of diseases, clinical presentations, and ill health, and being the pivotal plug, we enhance our vision and understanding of all clinical subjects and allied fields of medicine.

There are so many branches in our laboratory that we can develop interest in and pursue. In doing so, many fields of laboratory medicine narrow down and one's own endurance helps in being a better laboratory physician. In our own fraternity of AMBI, many members have crossed borders which were thought "out of bonds." Examples are abundant among clinical biochemists venturing into being the final word of certain diagnosis and hence, being looked upon as an authority in the particular field, not only by own laboratory colleagues but also by clinicians.

What must be never forgotten though is that when we grow in confidence and stature it is our duty to teach and train the next generation, a process, i.e., absolutely essential for progress in clinical biochemistry.

Opportunities knock at every step in clinical biochemistry in union with laboratory medicine. The present generation has to develop a dedicated approach to succeed with one's own perseverance!!!

DR S GOPALAKRISHNAN ORATION

Biography

Dr S Gopalakrishnan, a doyen in the field of clinical biochemistry, was born on August 1, 1931, in Mayiladuthurai, Thanjavur district, Tamil Nadu, India. He graduated from Thanjavur Medical College, Thanjavur, in the year 1953. He joined the Tamil Nadu Medical Service in the year 1957. He obtained his MRCP in the year 1967 and later was conferred FRCP in the year 1975. He worked as professor in most of the government medical colleges like Thanjavur Medical College, Stanley Medical College, Kilpauk Medical College, Tirunelveli Medical College, Madurai Medical College, and Madras Medical College. He was the first director of the Institute of Biochemistry in the year 1983. He became the dean of Stanley Medical College in the year 1987. Later, he retired as dean of Madras Medical College in August 1989. Postretirement, he worked as professor and head of Annamalai Medical College, Chidambaram, Tamil Nadu, India. He was the founder member of the Association of Clinical Biochemists of India (ACBI) and he conducted the ACBI conference in 1977. He was the founder member of the Annual Conference of the Association of Medical Biochemists of India (AMBICON). He has attended many national and international conferences and has published more than 75 papers at the national and international level. He passed away on December 30, 1992.

Molecular Diagnosis of Hemoglobinopathies and Thalassemia

[1]Mauchumi S Pathak, [2]Dulal Kalita, [3]Monalisha S Borah[3]

[1]Professor and Head, Department of Biochemistry, Silchar Medical College & Hospital, Silchar, Assam, India

[2]Assistant Professor, Department of Paediatrics, Gauhati Medical College and Hospital, Guwahati, Assam, India

[3]Senior Research Fellow, Department of Biochemistry, Gauhati Medical College and Hospital, Guwahati, Assam, India

INTRODUCTION

Hemoglobinopathies and thalassemia are genetic blood disorders affecting more than a million worldwide. The Northeast region of India has a high prevalence of these genetic diseases. Diagnosis at an early stage is very much important. High-performance liquid chromatography (HPLC)-based diagnosis methods and amplification-refractory mutation system (ARMS) polymerase chain reaction (PCR) helps in accurate diagnosis of these inherited diseases.

AIMS AND OBJECTIVES

The aim of the study was to screen the hemoglobin (Hb) variants by HPLC-based method and ARMS PCR was done to identify the beta-thalassemia mutations.

MATERIALS AND METHODS

A total of 1,000 cases referred for Hb typing were tested for hemoglobinopathies and thalassemia by the HPLC-based hemoglobin testing machine. Mutational patterns for the five mutations, namely IVS 1-5 G−>C, IVS 1-1 G−>A, IVS 1-1 G−>T, Codon 8/9, and Codon 41/42, were done by ARMS PCR to identify the most common beta-thalassemia mutation.

RESULTS AND OBSERVATIONS

Among the 1,000 cases, 63.3% were diagnosed with Hb variants and the rest (36.7%) were without any type of hemoglobinopathies or thalassemias. The most common Hb variant diagnosed was HbE heterozygous (22.6%), followed by beta-thalassemia (16.7%), compound HbE beta-thalassemia (9.3%), HbE homozygous (6.9%), sickle cell trait (3.3%), beta-thalassemia major (1.9%), sickle cell disease (1.8%), and compound HbS beta-thalassemia (1%). About 5% of the cases were indicative of alpha-thalassemia. Five different beta-thalassemia mutational patterns were studied in 282 cases having beta globin gene defect, and among them, 177 cases (62%) were identified with IVS 1-5 (G−>C) mutation and 22 cases (7%) were encountered with the codon 41/42 (-CTTT) mutation. The remaining 83 cases (29.43%) were negative for all the five common mutations.

CONCLUSION

The HPLC-based Hb typing helps in easy and accurate diagnosis of Hb variants. Mutational pattern study of thalassemia helps in identifying the common mutation prevalent in a region, which may be helpful during prenatal diagnosis of these genetic diseases. Awareness programs, prenatal diagnosis, and genetic counseling may help to curb the occurrence rate of these inherited disease which causes social and economic burden.

DR AKHORI SURYA SHEKHAR SINHA ORATION

Biography

Dr Akhori Surya Shekhar Sinha was born in Patna on September 4, 1908. He did his MBBS from Patna Medical College in 1936 and MD Physiology in the year 1943. He joined Sriram Chandra Bhanj Medical College and Hospital, Cuttack, Odisha, India, and worked there from July 1944 to June 1946. He became founder teacher of Physiology at Darbhanga Medical College, Bihar, India, and established the Department of Physiology. He then went to London and did his PhD in Physiology in the year 1949 and served as teacher in the Sherrington School of Physiology, St. Thomas Hospital, London. After his return, he joined as professor and head of the Department of Physiology at Patna Medical College, Bihar, India, in the year 1949, a post he continued until 1971.

He has to his credit 18 research publications in national and international journals.

Dr Sinha was elected as Fellow to the Royal Society of Medicine (London), Physiological Society of UK, and was a member of the Sectional Committee of the Indian Science Congress and founder member of the Physiologists and Pharmacologist Association of India.

Interferences in Immunoassays

Dr Pragna B Dolia
Department of Biochemistry, ACS Medical College, Chennai, India

Immunoassays aid in rapid, less laborious, and inexpensive diagnosis of various diseases by measuring analytes ranging from hormones and antibodies to proteins and drugs in matrices as diverse as whole blood, sweat, meconium, and cerebrospinal fluid. With continuous advancements, these tests, which utilize the antigen–antibody immune reaction, are sensitive – detecting up to picomolar concentrations – and specific, measuring a wide range of analyte concentrations.

Immunoassays have some challenges in that they are subject to interferences, thereby generating positive interference or negative interference in reported results. Such results could lead to misdiagnosis or missed diagnosis, causing unnecessary and expensive additional laboratory and clinical investigations, not to mention significant morbidity and even mortality in the affected patients. So it is important to detect interferences and take steps to generate correct results. There are five most common sources of immunoassay interference.

An important source of immunoassay interference is human endogenous antibodies, which may react with immunoassay reagents, causing either positive or negative interferences, depending on assay antibodies and architecture. These interfering antibodies are of four types:

- *Heterophilic antibodies*: These nonspecific antibodies interact poorly with immunoassay antibodies (mostly at the Fc region).
- *Antianimal antibodies*: These are specific and interact strongly with assay antibodies. Patients develop them because of either treatment with therapeutic (animal) antibodies or close association with those animals. Human antimouse antibodies are most common and are used most often in assay reagents.
- *Autoantibodies*: These are found mostly in individuals with autoimmune disorders. For example, patients with thyroid disease have antithyroid antibodies.
- *Therapeutic antibodies*: These are therapeutically administered antibodies or their fragments, like Digibind, which detoxifies digitalis toxicity. Therapeutic antibodies will interfere in immunoassays until excreted by the kidneys.
- Serial dilution should resolve antibody interference. When the interference is sufficiently diluted out, the analyte concentration, adjusted for dilution, will provide the correct result. Precipitation or ultrafiltration also will remove interfering antibodies, after which the reanalyzed sample should yield the correct result.
- *Matrix effect*: Nonspecific interaction between the specimen and the assay reagents is another type of immunoassay interference. Laboratories use various proteins and surfactants and optimize their assay buffers and ionic strength to minimize the matrix effect. Samples that contain enzymes or substrates similar to those used in immunoassays may generate incorrect results. For example, a sample with elevated alkaline phosphatase may give incorrect results in assays that employ alkaline phosphatase as labels.

In summary, laboratorians should correlate every report with the provided clinical history to identify incorrect immunoassay results, identify the root causes, solve the interferences, and report correct results.

DR B SADASIVUDU ORATION

Biography

Dr B Sadasivudu was a meritorious student with top honors in medical school, both at undergraduation from Andhra Medical College, Visakhapatnam, Andhra Pradesh, India, and postgraduation from the All India Institute of Medical Sciences. After retirement from a long tenure in the Government of Andhra Pradesh Medical Services, he has been associated with various institutes in India and abroad in teaching and research faculties.

He has trained in neurochemistry at the Columbia University Medical Center, New York, and Oakland University, and is a member of various national and international bodies. He is also the recipient of the prestigious B.C. Roy award for best medical teacher.

He is well known for his research abilities and has nearly a 100 papers in reputed journals, such as Nature, WHO Immunology New Letters, Journal of Neurochemical Research, Journal of Brain Research, Archives Internationales de Physiologie et de Biochimie, IRCS Journal of Medical Science, to name a few.

He is a constant guide in various issues of clinical chemistry and research and for anyone with an ear for biochemistry even today.

Curriculum Reforms

Dr Ramesh Pradhan
GCS Medical College and Hospital, Hyderabad

The world has seen rapid strides forward in all scientific fields, and medical education is no exception with new medical information, technology, and teaching models. Just like the dynamic field of medicine, expectations of medical students with regard to education are changing rapidly. We stand to facilitate knowledge transfer to the next generation of clinicians and scientists to serve our patients and our communities. We have come a long way from the Abraham Flexner report in 1910, which put an end to hundreds of substandard medical schools in the United States.

The health care environment itself is seeing a change. Health care financing and technologies are evolving constantly. We now stress more on preventive aspects of health care, and medical advances have led to earlier detection and treatment of diseases. Care once delivered only within a hospital is moving to outpatient settings. Another aspect is the growing population of senior citizens as people live longer. So medicine is changing and with it will change the learning methods.

In India, any curriculum reform needs approval of the accreditation body: The Medical Council of India. Curriculum reform has been advocated for over 30 years, with calls for greater relevance of the curriculum to the needs of the community. We have undergone changes in curriculum and have adopted the teachers training program.

In curriculum planning, we have to:

- Recognize the need to build a culture for the future, moving away from hierarchical, autonomous, and competitive learning to a more collaborative, team-based, service-based, and patient-centered model.
- Meet the needs of learners of the future by rethinking how students are tested, and be adaptive to the use of technology in learning.
- Adopt a competency-based approach to education.
- Focus on the patient at the center, emphasizing patient-centered clinical models.
- Understand that the imperative for change is part of the core ethics of medicine.

DR SHEELA DEVI M KODLIWADHMATH ORATION

Biography

Dr (Mrs) Sheela Devi Mallikarjuna Kodliwadhmath oration was instituted in the year 1999 by Dr MV Kodliwadhmath, founder member and past president of AMBI, in the name of his wife, Dr Sheela Devi. She is a well-known gynecologist. She did her MBBS from Dr Vaishampayan Memorial Government Medical College, Solapur, Maharashtra, India, in the year 1975 with gold medal in obstetrics and gynecology. She completed her MD in the year 1982 from Karnataka University, Dharwad, Karnataka, India. Presently, she is working as professor and head, Department of Obstetrics and Gynecology, Navodaya Medical College, Raichur, Karnataka, India. She got fellowship award of ICOG in the year 2004. She has published more than 15 papers in national and international journals of obstetrics and gynecology and has participated and presented many research papers in national and international conferences.

Insulin Resistance in Acute Ischemic Heart Disease

Udayan Ray
Royal Hobart Hospital, Hobart, Australia and Sinha Institute of Medical Sciences and Technology, Kolkata, India,

INTRODUCTION

Studies by many investigators including us have demonstrated that insulin through its multifaceted antithrombotic effects could be an essential humoral factor for the prevention of coronary artery disease (CAD) (Bioassay 26, 91–98, 2004). It is then possible that the thrombosis in CAD is pathophysiologically related to the failure of insulin, at least partly, to provide thromboprotection in this condition. Since insulin has been reported to inhibit platelet aggregation through the synthesis of nitric oxide (NO) by stimulating platelet insulin-activated nitric oxide synthase (IANOS), we studied the status of the enzyme and found its activity was severely impaired due to the presence of an inhibitor in CAD plasma. The properties of the purified inhibitor were studied.

MATERIALS AND METHODS

Blood was collected from the patients with CAD (males = 10, females = 10, age = 35–80 years) and from equal number of age- and sex-matched normal volunteers. None of the participants was a smoker or had diabetes mellitus or taken aspirin at least 14 days before blood donation. Blood from CAD patients was collected before the initiation of antithrombotic therapy. The inhibitor was purified from the anticoagulated plasma from single donor by chromatography. The homogeneity of the inhibitor was determined by sodium dodecyl sulfate polyacrylamide gel electrophoresis. The inhibitor was quantitated by enzyme-linked immunosorbent assay.

RESULTS

The purified inhibitor was determined to be the heavy chain of immunoglobulin G with Mr 66 KD. While the amount of the inhibitor in CAD plasma was 7.5 µg/mL, its presence in normal plasma could not be detected. While the incubation of normal washed platelets in Tyrode's buffer with 200 µ unit insulin/mL produced 3.3 nmol NO/10^7 platelets/h, incubation of the suspension with 7.5 µg inhibitor/mL for 60 minutes at 37°C reduced the insulin-induced NO synthesis to 1.3 nmol/10^7 platelets/h under similar conditions. Incubation of normal platelet-rich plasma with the same amount of the inhibitor under identical conditions resulted in the blockade of insulin-induced inhibition of platelet aggregation by 70% induced by different aggregating agents.

CONCLUSION

We conclude that a novel antibody against IANOS in platelet membrane appears in the circulation in CAD, which through the blockade of NO production impairs the insulin-induced inhibition of platelet aggregation and may be involved in the development of CAD. Thus, insulin resistance plays an important role in the pathogenesis of acute ischemic heart disease.