PROCEEDINGS

OF THE

FIRST NATIONAL RESEARCH WORKSHOP

Developing Infrastructure for Bio Medical Research :

Opportunities for Medical University

4th & 5th March 2010

SDUAHER

SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH

A DEEMED TO BE UNIVERSITY

TAMAKA, KOLAR - 563 101.

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First National Research Workshop

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Sri Devaraj Urs Medical College
No.
Date 28/9/18
Tamaka, KOLAR.

Sri Devaraj Urs Medical College is an ISO certified and NAAC accredited, 25 Years old medical college situated in the semi rural environs of Kolar, Karnataka. In 2007 it was granted a Deemed to be University status by the Ministry of Human Resources Development, Government of India, under the name Sri Devaraj Urs Academy of Higher Education and Research.

The thrust areas of The Academy are imparting excellent medical education, giving quality patientcare and encouraging and engaging in research, especially in clinical and basic medical sciences as well as community/ environment related topics.

The Academy conducts several departmental research project and also collaborations with centers of excellence like CCMB Hyderabad; Indian Institute of Science, Bangalore; St. John's Medical College, Bangalore; Public Health Institute Hyderabad apart from international collaboration with University of Minnesota, USA.

The First National Research Workshop of SDUAHER was held on the 4th and 5th March 2010. The theme of the workshop was "Developing Infrastructure for Biomedical Research : Opportunities for Medical Universities". A total of 276 delegates (142 faculty, 88 PG Students and 46 Interns) attended the workshop. Several undergraduate students also availed the opportunity of attending many of the talks.

The workshop was inaugurated on 4th March 2010 by Dr.P.Balaram, Director Indian Institute of Science, Bangalore, who also delivered the keynote address. Sri R.L.Jalappa, President of the Academy, Dr.S.Chandrashekar Shetty, Vice Chancellor, and the eminent faculty from India and abroad, graced the occasion. The inspirational talks, followed by lively interactive sessions were spread over two days.

The unique feature of the workshop was the 15 student papers presented by post graduate students of various departments of Sri Devaraj Urs Medical College, Kolar. These were highly appreciated by the visiting faculty. Sri. R.L. Jalappa gave away prizes for the best three students papers.

This brief 'Proceedings' of the workshop has been compiled to function as a reference of the talks by eminent faculty, as well as to record the scientific activity of The Academy.

KEYNOTE ADDRESS

BIOCHEMISTRY AND MEDICINE, PHYSIOLOGICAL CHEMISTRY NUTRITION, INBORN ERRORS OF METABOLISM, GENETICS & DISEASE, GENOMICS, PROTEOMICS AND METABOLOMICS

Dr P Balaram*

There is a need for integration between basic sciences and medicine ie. Chemistry, Biology and Medicine. It is important to understand the protein structure and its role in diagnosis of disease. Work of eminent Noble prize winners in science namely Linus Pauling, Milliken and Max Perutz has contributed immensely to the field of biological and clinical research.

Hemoglobinopathy is a genetic defect that results in abnormal structure of one of the globin chains of the hemoglobin molecule. The genetic defect may be due to substitution of one amino acid for another leading to abnormal hemoglobins which can have a variety of physiologically significant effects. Altered protein in the hemoglobin chain which leads to sickle cell anemia is a lucid explanation for a specific hemoglobinopathy. It is due to polymorphism of a protein. According to

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**Dr. P. Balaram, the Director of Indian Institute of Science, Bangalore, is a professor of Molecular Biophysics. He is a Fellow of the Indian Academy of Sciences, Indian National Science Academy and the Third World Academy of Sciences, Trieste, Italy. He has received several awards and was conferred the Padma Shri in 2002. He is a Member, Science Advisory Committee to the union cabinet and Scientific Advisory Council to the Prime Minister.*

V. M. Ingram, beta globin chain of sickle cell hemoglobin differed from the normal chain at a single amino acid. The difference in the hemoglobin structure in sickle cell anemia is that glutamic acid is replaced by valine Linus Pauling had commented on Ingram's results: "It is astounding that the difference in structure is so small only about a dozen atoms out of 10,000 in the molecule are different. On such small atomies man's fate depends!" Hemoglobin molecule teaches us biology, chemistry and medicine. Thalassemia is a genetic defect that results in production of an abnormally low quantity of a given hemoglobin chain or chains resulting in an inadequate number of red cells.

Max Perutz who won the Nobel Prize for Chemistry in 1962 had determined the molecular structure of hemoglobin, the red protein in blood that carries oxygen from the lungs to the body tissues. Perutz had attempted to understand the riddle of life in the structure of proteins and peptides.

Techniques used to study the proteins dating from electrophoresis are paper chromatography in 1940s to electro spray ionization by J.B. Fenn (1984) to the present days of mass spectrophotometry. In the first electro spray mass spectrometer sample solution was sprayed from the hypodermic needle into a counter-current flow of dry nitrogen. The needle was at high potential relative to the cylindrical electrode and the end plate containing the orifice into the vacuum system. A center portion of the resulting free jet passed through the skimmer into a second vacuum chamber containing a quadrupole analyzer. Mass spectrometry is an analytical technique for the determination of the elemental composition of a

sample or molecule. It is also used for elucidating the chemical structures of molecules, such as peptides and other chemical compounds. Mass spectrum and tandem mass spectrometry ion traps are capable of multiple rounds of mass spectrometry, usually separated by some form of molecule fragmentation.

The molecular characterization of hemoglobin variants is usually conducted at two levels. The first level involves gel electrophoresis or cation exchange high performance liquid chromatography (HPLC) while the second level of analysis engages Mass Spectrometry (MS) and/or DNA sequencing. The combination of liquid chromatography and Electrospray ionization Mass Spectrometry (LC-ESI-MS) and DNA sequencing analysis are complementary techniques, with the latter usually being used to confirm deductions based upon mass spectrometric analysis. "De novo sequencing" is a process where peptide sequences are derived from the masses of their fragments as shown on a tandem mass spectrum. When performing de novo sequencing, no protein sequence database is used for reference. LC/ESI-MS of Human Hemoglobin versus LC/ESI-MS of Sickle Hemoglobin, Identification of Sickle Mutation (MS/Trypsin Digestion) and MALDI-MS of Tryptic Peptide Finger Print of Normal and Sickle Cell Hemoglobin could be exploited.

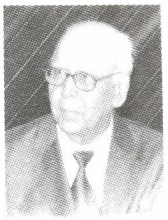
Role of biochemistry in understanding the disease process and the need for conducting research in the field of medicine where opportunities are plenty has to be stressed. Future prospects of mass spectrometric characterization of hemoglobin tetramers are identification of heterogeneity of subunit (quaternary) structure and quantitation of heterogeneous hemoglobin tetramers in blood. Triose-phosphate isomerase (TIM), is an enzyme that catalyzes the reversible

interconversion of the triose phosphate isomers dihydroxyacetone phosphate and D-glyceraldehyde 3-phosphate. TIM plays an important role in glycolysis and is essential for efficient energy production. TIM has been found in nearly every organism searched for the enzyme, including animals such as mammals and insects as well as in fungi, plants and bacteria. However, some bacteria that do not perform glycolysis, like ureaplasmas, lack TIM. In humans, deficiencies in TIM are associated with a progressive, severe neurological disorder called triose phosphate isomerase deficiency. TIM is a highly efficient enzyme, performing the reaction billions of times faster than it would occur naturally in solution. The reaction is so efficient that it is said to be catalytically perfect: it is limited only by the rate the substrate can diffuse into the enzyme's active site. TIM mutations in humans and the abnormalities have to be highlighted.

Patterns of selection responsible for specific functional traits are a part of general evolution about selection and heritability of broad classes of traits. Biology depends on natural selection (Charles Darwin), inheritance (Gregor Mendel) and chemistry of heritance (Watson & Crick).

Newer Advances on Application of Information Technology in Medical Research

Dr. R.D. Lele*



Introduction to Bioinformatics:

Bioinformatics, a new discipline is concerned with the application of computers to biological problems, the full scope of which is described in Table 1.

The draft of the entire human genome was presented to the world in June 2000. It may not be generally recognized that computers played a crucial enabling role in the success of the Human Genome Project (HGP) Creg Venter's Celera Genomics employed a super computer in 1999 which contained some 800 Alpha EVG and EV67 processors with 64 bit architecture and over 80 terrabytes of memory housed in specially, designed quarters about the size of a basket ball court. The super computers capability of 1.3 trillion floating point operations per second reduced functions that used to take years, to a mere 15 seconds. Over 400 miles of fibre optic and copper cables were laid to handle the DNA sequence data, and to assemble the billions of bases of raw DNA sequence data into the finished human genome sequences.

The central challenge to bioinformatics is the rationalization of the huge mass of DNA and protein sequence information, and conversion of sequence information into biochemical and biophysical knowledge; to decipher the structural, functional and evolutionary clues encoded in the language of the biological

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sequences. The development of more powerful and incisive analytical tools, and more powerful pattern recognition and structure and function prediction tools will continue to be dominant themes in bioinformatics research.

The direct prediction of protein three dimensional structure from the linear aminoacid sequences is the Holy Grail of Bioinformatics.

The essence of computer-based sequence analysis is detection of homologous, orthologous and paralogus relationships, by means of sequence database searches.

Silicon-Based Biology:

Computer programmes provide mathematical models of biological systems. They provide clues to be experimentally verified by biologists. Pattern recognition methods are built on the assumption that some underlying characteristics of a protein structure can be used to identify similar traits in related proteins. The rules of protein folding have not been fully understood.

With new DNA sequences being added to DNA data bases at an average of once every minute, a sequence search protocol tries to predict the protein structure and function from linear aminoacid sequences, and its relationship to previously characterised families.

Paradigm shift:

Historically the function of a biomolecule was discovered first-eg. Hemoglobin & myoglobin (structural proteins), urease (enzyme). The 3D structure of the protein or enzyme was determined, eventually the gene encoding the protein or enzyme was isolated and sequenced. In the current era of bio-informatics, DNA sequencing technology allows rapid sequencing of the entire human genome. By using the gene-finding algorithm, we can now predict the protein and its sequence and function. Instead of the current hypothesis-driven experiments, in future question-driven experiments will lead to new discoveries.

Computer-assisted drug discovery& development:

Computational chemistry has grown tremendously in power and sophistication, the scientific credibility of which was confirmed by the award of the 1998 Nobel Prize in Chemistry to the theoretical chemists John Pople and Walker John.

Our ability to model protein structures, automatically dock compounds to them or design from scratch molecules that can bind to them is increasingly important for finding and designing new drugs.

The fundamental goal of drug design is to develop a highly specific molecule that will attack only one target (a single molecule that causes a problem in a disease state). The reason why most drugs have side effects is because they bind to secondary targets involved in physiological reactions other than the one targeted for control by the drug. Hopefully a computer-assisted approach by increasing target specificity will produce drugs with few or no side effects.

From gene to screen:

Technologies such as differential gene expression, in situ hybridization, immunohistochemistry and transgenic/knock out animal models are useful in proteomics to identify targets. Technology has advanced so much that the entire corporate compound collection (thousands to millions of compounds) can now be tested against a new target in a matter of days. Accelyris is the leading provider of software solutions to combinatorial chemistry and high throughut screening (HTS) though its powerful analysis and simulation tools.

Metabolomics is going to have an impact in all aspects of drug discovery and development. Paracetamol toxicity is due to a basic chemical reaction between the drug and glutathione, resulting in glutathione depletion and oxidative stress Cyanide kills within seconds or minutes by inhibiting cytochrome oxidase. In these two examples there is no involvement of the various drug metabolizing cytochrome P450 enzymes which determine the metabolic fate of the drug (pharmacometabolomics). Understanding an individual's drug metabolizing phenotype based on his individual genetic variation will enable individualized drug therapy, in the near future.

Biological switch-boards and signaling cascades:

Martin Rodbell and Alfred Gilman shared the 1994 Nobel Prize in Medicine for revealing the nature of biological switch-boards in every cell. Multiple parallel and criss-crossing intracellular signaling pathways are constantly operating in health and disease. Different combinations of homodimers, heterodimers and heterotrimers are found to initiate signaling and cell activation in several systems. There is a cybernetic relationship in cellular biochemical reactions.

Drew Endy and John made a computer model to simulate mathematically how all the 56 genes of the virus T7 bacteriophage were translated into 59 proteins, how these proteins subverted the host cell (E, coli) and how the virus would evolve resistance to the various RNA based drugs.

Lessons learnt from engineering hundreds of "knock-out genes in bacteria and mice have shown that many of those broken genes caused no apparent abnormality. The principle of robustness is emerging as an important underlying principle. Life of every kind has to cope with dramatic swings in temperature, available nutrition, assaults by toxins & chemicals & attacks from without and within. In order to survive cells must have back up systems and biological networks that tolerate interference.

What most strongly determines how a cell behaves in response to a drug or disease is not whether a particular gene is turned up or down and not whether a particular single protein is blocked or stimulated, but how all the genes and proteins interact dynamically in a complex network.

Datamining of patient records for knowledge discovery:

The Institute of Medicine (IOM-USA) has emphasized the importance making full use of the Information and communication Technology (ICT) and its automated information management tools to achieve high quality of healthcare promotive, preventive and curative, for each and every individual over his entire lifetime. The Institute of Medicine (IOM-USA) has emphasizing the importance of creating

Lifelong Electronic Health Record (HER) for each member of a family. Life and health insurance companies should actively support and finance the wide-spread creation of HER in their own enlightened business-interest.

Computerize Patient Record (CPR) necessitates direct structured data entry into the computer by the Clinician, pertaining to the patient's history and physical examination and laboratory and imaging tests and medications.

CPR permits medical audit of performance to ensure quality of care. Data mining of CPRs is a rich source of Clincial Research especially drug therapy effectiveness and adverse drug reaction epidemiology. Knowledge discovery in databases (KDD) is achieved by Data Mining (DM) using several approaches Decision Trees, Neural Networks, Clustering, association rules, reduction rules genetic algorithms and Bayesian Network. The vast amount of observational medical data can be explored to seek relationships hitherto unknown. Data mining for causal knowledge discovery is a very important activity in the computer community Many tools are employed for seeking causal relationships in observational medical data bases. Details can be found in my book Computers in Medicine: Progress in Medical Informatics (2005).

Neurocomputer and Artificail Neural Network (ANN):

Pattern recognition is the basic diagnostic process employed by the clinician. Interpretation of histopathology, cytology, ECG, EEG, EMG, radiological and ultrasonographic images as well as SPECT, PET and MRI is based on visual pattern matching and pattern recognition. Fortunately all current imaging devices can generate digital images that can be manipulated by computers and Artificial Neural Networks (ANNs).

One strength of the ANN approach is its ability to deal with missing or uncertain inputs. As against regression analysis and recursive partitioning which are linear statistical methodologies, ANN is a method for applications of non-linear statistics.

ANN are already used in molecular biology and genetics to compare sequences of nuleic acids and proteins, ananlysis and predication of secondary and territory structure of protein, and structure-activity relationship and physic-chemical properties.

Computer-assisted Medical Decision Marking:

The large amount of existing medical knowledge and the rapid exponential growth of that knowledge during the last quarter of the 20th Century have resulted in a situation wherein most physicians find it increasingly difficult to assimilate all the information which is necessary for making optimal clinical judgements. Specialization and super specialization provide a partial solution to this problems but the rapid evolution of technology and clinical research makes it difficult even for the specialist to keep up. In the light of this " information explosion" it is not surprising that empirical studies have shown that physicians do not always make optimal decisions.

The human brain is unsurpassed in its ability to perceive, focus, think, analyze, imagine and create concepts, but it is greatly limited in its ability to store a large collection of facts permanently, to recall the facts instantaneously and precisely and to handle multiple variables at one time. It is in these areas that the computer will supplement (not supplant) the human brain and vastly improve clinical decision-making, which clinicians are constantly required to make under conditions of uncertainty. Hence the crucial need for making full use of Information & Communication Technology (ICT) and its automated information management tools to achieve, and ensure high quality care.

Training for Bioinformatics and computational Biology:

National funding agencies both in USA & Europe have committed significantly large resources to bioinformatics training. Francis Collins, director of National Human Genome Research Institute USA has said "Every institution that expects to be competitive in this new era will need to have strengths in high throughput genomic analysis and computational approaches to biology"

Table I : Computer Applications in Medicine

- Hospital Information System (HIS)

  Patient registration, admission, discharge, transfer-daily, monthly, annual census.

  Electronic patient record and computerized prescription.

  Patient billing and accounting financial control, purchase management

  Surgical scheduling, diet planning & store inventory

  Maintenance of equipment and instruments. Fixed Assets

  Human Resources Management

  Patient feedback-quality assurance of patient care

  Medical Insurance Policies Management

- Intelligent Clinical laboratory

  Clinical chemistry

  Automated analyzers-GCMS

  Hematology; cytology; chromosome analysis: Semen analysis:

  RIA, multi-analyte binding assays.

- ECG,EEG,EMG and Nerve Conduction:

  Evoked potentials, late responses

  Computerized processing & interpretation of data

- Medical imaging:

  Ultrasonography; CT, MRI, MRS

  SPECT/PET, Magnetoencephalography

  Virtual Endoscopy (CT/MRI/US)

  Co-registration & image fusion (PET/CT)

  PACS (Picture archieving and Communication System)

  Pattern recognition by trained ANNs

  (Artificial Neutral Networks) for image interpretation & reporting.

- ## Medical Decision Making

  Expert Systems based on

  Categorical reasoning (algorithms, protocols)

  Bayesian probabilities: decision analysis

  Production rule systems IF/THEN

  Case-based reasoning.

  Congnitive models: Frames Semantic Nets.

- ## Critical Care-ICU

  Automated fluid & metabolic balance

  Automated pulmonary function evaluation and Decision support for mechanical ventiliation

  Cardiac rhythm monitoring and

  Cardiovascular physiological evaluation

- ## Robotics in Surgery

  AESOP (automated Endo scopic system for optimal positioning)

  SARP (Surgeon-Assisted Robot for Prostatectomy)

  MIST (Minimally Invasive Surgical Trainer). Virtual Endoscopy & virtual laparoscopy.

- ## Patient Education & Health Care Information

  Interent: helath-on-line

  Self-management education: Diabetes mellitus; Asthma; arthritis; Hiv etc.

- ## Computerized aids for the Handicapped Mobility:

  Microprocessor-controlled

  Wheelchairs; automobiles

  Blind-Batcane; portable reading aids

  Artificial vision: Dobelle Eye

  Deaf-cochlear implants;

  Mobile phones for hearing aid users Nokia LPS-3

  Robots to assist elderly infirm

- ## Telemedicine

  Video conferencing in real time

  Teleradiology: Telepathology

  Telecardiology: Tele-dermatology: Telepsychiatry: Tele-health

  Tele-surgery: Tele-mentoring

- ## Medical & nursing Education

  Visible Human Project to teach anatomy and surgery

  Active learning centre (ALC)

  Case simulations and interactive multi-media education: interactive CAV laser video discs.

  Virtual Medical School, virtual classroom, virtual library, virtual patients.

- ## Computer-based testing (CBT)

NIH FUNDING PROCESS FOR BIOMEDICAL RESEARCH

Dr. Tonse N. K. Raju *

The topics covered are, the NIH and its organization, Budget and funding mechanisms, and determining funding priorities, Grant application and funding process, Some examples of international research activities funded by NIH.

The National Institutes of Health was founded in 1887, today is one of the world's foremost medical research centres. It is the Federal focal point for medical research in the United States. NIH constitutes 27 Institutes and Centres and several Offices. Its Mission is "To acquire new knowledge to help prevent, detect, diagnose, and treat diseases and disabilities, from the rarest to the commonest. To uncover new knowledge that will lead to better health for everyone. Main activities of NIH are to conduct research in its own laboratories, support research of non-Federal scientists in this country and abroad, from universities, medical schools, hospitals, and research and for-profit institutions, help train research investigators, foster communication of medical and health sciences information to the scientific Community and the general public. National Institute of Child Health and Human Health (NICHD) is named in honour of Eunice Kennedy Shriver is a

Dr. Tonse N.Krishna Raju is the programme officer, Pregnancy and Perinatology Branch, Centre for Developmental Biology and Perinatal Medicine at the Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health, U.S.A. He is a Fellow of the American Academy of Pediatrics and has been a distinguished teacher in University of Illinois, Chicago. He is also the Adjunct Professor of Pediatrics, Georgetown University, Washington DC.

branch of NIH. The mission of NICHD is to help people have healthy babies when they want them, to avoid harm to women from the reproductive process, to help all children reach adulthood and be able to achieve their full potential and to optimize rehabilitation and achieve minimal disability.

Budget allocated in the year 2006 was 27 billion US $ and is increasing year by year.69% of the total NIH budget is reserved for research grants. Complete listing at http://www.nichd.nih.gov/funding/funding-mechs.htm- about all research grants. Some of the types of grants are: Research Project Grants: R01, R03, and R21, Small Business Technology Transfer (STTR) & Small Business Innovative Research (SBIR) Research Grants (R41, R42, and R43, R44). Supplements to existing Research Grants can be either minority supplement or career re-entry supplement. An application in response to "Program Announcements" (PA) & "Request for Applications" is to be made.

The foreign Institution applicants will be one of R01, R03, R21, R13 and R34 awarded as a sub-award to a domestic PI's research grant or as a sub-project to a domestic PI's research grant. The requirement are special research opportunity not available in the US, or which augments existing US resources (must be described in the application), Special talents, Special facilities, Unique demographic/epidemiologic conditions, Special populations like foreign nationals temporarily in the U.S. on a visa can apply for NIH research support R01, R03, K99/R00, P01, etc. if they have a formal written appointment (no salary necessary) with a U.S. institution. Can not apply for training or career awards (F, T, K).

Prerequisites for determination of award are scientific merit of the PI and the institution applying and program considerations, availability of funds & determining Scientific Merit. Grant Applications & Funding Process steps are Step 1: Researcher develops the idea & prepares a grant proposal; Step 2: School or University submits it to CSR/NIH; Step 3:Center for Scientific Review Receives all applications; Step 4:Assigns to a Review Group or Study Section & an IC; Step 5: Study Section Evaluates the Science, Scores; Step 6: IC evaluates for programmatic relevance; Step 7: Advisory Councils and Boards recommend action; Step 8: Institute Director takes final action; Step 9 : Applicant Institution receives the Funds and Step 10:The PI and her team conduct research.

Study Sections includes review groups, convened by the Centre for Scientific Review (CSR). The review group members are from the scientific community at large they are not NIH personnel. The CSR maintains the review process independent of the NIH Institute or Centre. Each year, >80,000 Grant applications are submitted. Most are now submitted electronically. CSR Referral Officer assigns the application to the most appropriate Study Section for review.

Criteria for review of submitted project proposals are:

Significance-what is the impact of this study, if it is carried out;

Approach- Is the study well designed;

Innovation- does it involve novel concepts, approaches, methods or challenges existing paradigms;

Investigator-does the P.I. have the appropriate training or experience; environment - Are the available resources adequate to carryout the proposed

study. Additional Criteria are protection of study participants , researchers are animal care and Budget. All applicants receive a detailed review notes, called the "Summary Statement", which includes reviewers' critiques, scores, criterion scores by each reviewer and Impact score. All discussed applications receive an "impact score" if 10 to 30,then high impact, 40 to 60 is moderate impact and 70 to 90 will be low impact.

Common problems in unsuccessful applications are lack of new or original ideas; absence scientific rationale; lack of experience in the methodology. Questionable experimental approaches are diffuse, superficial, or unfocused research plan; lack of sufficient experimental detail; lack of knowledge of published relevant work; unrealistically large amount of work and uncertainty concerning future directions.

Some features of NICHD international programs are consultation are partnerships; capacity Building; addressing important health disparities; reduce burden of disease and disability. NICHD research portfolio in India is about global network, investigator initiated research and Indo-US programs.

NIH collaborates with India for different projects like Indo-US Program on Contraceptive and Reproductive Health Research (CRHR), Indo-US Program on Maternal and Child Health and Human Development Research (MCHDR) and many other researches details of which is available on NIH Funded-Grants' Database: Research Portfolio on-line Reporting Tool (Report) http://report.nih.gov/. National Institutes for Health provides research funds for innovative research. A meticulously written project proposal, submitted through right channel will be accepted.

GLYCATED HEMOGLOBIN

Dr H B Chandalia*

Glycated hemoglobin (Ghb) is a form of hemoglobin used primarily to identify the average plasma glucose concentration/ Diabetes Mellitus (DM) over prolonged periods of time, which has been in use since 1982. GHb is called fast hemoglobin; total fast hemoglobins include Hb-A1a + Hb-A1b + Hb-A1c. They are produced by post-translational, non - enzymatic, substrate-concentration-dependent combination of hexoses with ß - chain of Hb.

The monitoring of glycemia is a critical component of diabetes care. It may be divided into self-monitoring of blood glucose (SMBG), which measures the immediate level of glycemia and measurement of hemoglobinA1c (HbA1c), which reflects longer-term glycemia. HbA1c is a measure of erythrocyte hemoglobin glycation, and since erythrocytes have about a 120 day life span, HbA1c reflects mean glycemia for the previous 3 months (weighted to the most recent month). There are several conditions that puzzle the HbA1c measurement such as hemolytic anemia (lowers HbA1c) or aplastic anemia (raises it), but in most circumstances HbA1c is a valid index of glycemia. The recommendation is to measure HbA1c every 3-6 months, and treat accordingly. If these recommendations

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are successfully followed in most people with diabetes, long-term complications, especially microvascular complications, would be strikingly reduced.

Glycated Hemoglobin has three species, HbA1 (fast hemoglobin); HbA1c; total GHb. Components of HbA1 (fast hemoglobin) are HbA1a1 (fructose 1,6-diphosphate-N-terminal valine); HbA1a2 (glucose-6-phosphate-N-terminal valine); HbA1b (unknown carbohydrate-N-terminal valine). Component of HbA1c is HbA1c (glucose-N-terminal valine). Component of total GHb is HbA1c + Glucose-non-N-terminal sites.

Historical aspects of GHb; Kunkel in 1955 showed that Adult Hb can be separated into fast & slow components electrophoretically. Rahbar in 1948 proved that fast components increased in case of diabetes. Fluckiger in 1976 determined GHb by chemical method. The author along with Dr. Krishnaswamy in 1980 for the first time reported modified chemical method for the determination of GHb and elucidated the clinical significance of it in India. Bunn in 1981 established clinical relevance of GHb. Nathan in 1984 and Goldstein 1989 explained the kinetics of GHb.

Prospective studies have been done to establish the harmonious relation between HbA1c and the blood sugar for 2-4 months, and it was demonstrated that it does not always correlate with the blood sugar. In the previous study, a relation between hemolytic anemia patients with HbA1c was found. As the half life of RBCs is short in hemolytic anemias, the HbA1c values also were found to show reduced values. During situations like stress, hypertension, the HBA1c values were also correspondingly high, which normalized as sugar levels decreased.

The advantages of measuring GHb are time-averaged blood glucose over the past 2- 3 months; useful in Type 1 DM; useful in pregnancy; does not need to be drawn at a fixed time before or after meal; useful in diagnosis of DM and correlates to complications.

Although HBA1c is advantageous in detection of diabetes there are many disadvantages of measuring it. The disadvantages are it is an expensive and difficult investigation. It is not useful for day-to-day adjustment in therapy. False low values could be seen in pregnancy; Hb S, C, D; hemolysis and renal failure. False high values could be seen in Hb-F; alcohol consumption, and in case of high dose of aspirin.

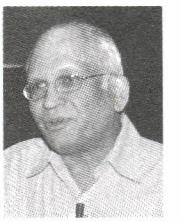
Review of Ghb/HBA1c as a parameter in long-term studies: Diabetes Control and Complications Trial (DCCT): Intensive group: 2% lower HbA1c. Microvascular benefits: 40-60 %. United Kingdom Prospective Diabetes Study (UKPDS): Intensive group: 1% lower HbA1c. Microvascular benefits: 35%. Macrovascular benefits: Not known. Real-Life Situation: HbA1c in USA and Germany, 8.5 %. Our series: 0.5 % lowering; 1.5 % above "good control".

To summarize HbA1c is an established parameter reflecting the state of metabolic control over the past 2-3 months. HbA1c is an essential component of all long- term research studies conducted in diabetes. HbA1c bears strong linear relationship with blood glucose. It is non- manipulable by the patient. However, it does not reflect the wide fluctuations in blood glucose. A variety of methods used in the estimation of HbA1c suffer from flaws like wider coefficient of variation , inability to separate pre glycohemoglobin , drug interference and falsely high or low values in the presence of hemoglobinopathies. The real life situation currently, all over the world shows that only 15-25% of diabetics attain HbA1c goals. HbA1c is likely to find a greater role in the diagnosis of diabetes. It is more specific but less sensitive

than a GTT. Currently, attempts are being made to standardize HbA1c and correlate it more accurately with the mean BG.

International Federation of Clinical Chemistry (IFCC) has given 2 reference methods for estimation of HbA1c, Electro Spray Mass Spectrometry and Capillary Electrophoresis. All values of HbA1c are now expressed in IFCC standard worldwide, only about 15-25% achieve HbA1c goals. In India, not many studies have suggested the safe HbA1c levels. But, Diabetes Endocrine Nutrition Management & Research Centre study reveals that only 15% have HbA1c <7 & 65% have >8.

INTEGRATION OF GENETICS IN CONTEMPORARY MEDICAL EDUCATION



Dr S.S. Agarwal*

Gene is the fundamental of biology and hence to health and disease. Every process in biology begins and ends due to the activity of a gene. The characteristics which are consistent in a species are attributed to its genetic make up. At the same time there are also some variations among different organisms of species. This is also as a result of their genetic structure. Variation in response to drugs and diet can also be explained by genetic studies. Thus, since genetics forms a foundation for biology, it is also a foundation for various aspects of health and disease.

Mapping the sequence of the human genome has not only been one of the greatest challenges for scientists, but also one of their greatest achievements. It has helped to solve several mysteries about the human body. Each of the 46 chromosomes has a specific pattern. To study the individual coding and regulatory elements, the use of technology is essential. With these advances, it has been now studied that only 2% of the genome is actively involved in coding for proteins. Also, each chromosome has about 136 million base pairs and associated with over 5000 genetic disorders. The need to know the pattern of each disease and methods to correct the genetic defect makes it essential to have a good knowledge of genetics.

The human genome is a foundation to the study of genetics. The genome project has three important characteristics.

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1. Genomics of biology
2. Genomics of health
3. Genomics of society

Functional genomics is a branch that deals with the study of individual regulatory proteins, over 25000 genes and mRNA.

The genomic project has used the concept of construction of a transgenic mouse to study different genetic variations. In this, a certain gene of interest is either added or removed from the genotype of a mouse to produce knock-in or knock-out mice respectively. The phenotype of these mice can now be studied to know a pattern of a particular disease.

There are three challenges to understand the human genome. The first is the task of understanding the types of genes, how they code for various proteins, how these proteins function on a mRNA and how the mRNA functions. To understand this elaborate process, a technique called RNA interference is used.

Concept of "New Biology-New Medicine" has crept i.e., new targets for drug development; etio-pathogenesis of cancer, risk prediction using biomarkers, prognosis/response to treatment; targeted therapy; genetics of common complex multi-factorial disorders; predictive medicine; pharmacogenomics; personalized medicine; biological/molecular basis of variation; behavior and evolution.

Once this is known, the next challenge of studying all the genes and DNA comes up. For this, micro array technology is used. It helps in studying each gene in totality. In this process, each gene is separated, placed in a medium, mounted on a slide and then viewed. This method can be used to study DNA, RNA and proteins.For example, study of lymphomas is done using this technique. By

observing which genes are over and under expressed, it is possible to classify lymphomas. The final challenge is to solve the mystery of the behaviour of a cell a cell. It is now understood that each gene in a cell will behave differently in the presence of a new environment or in combination with a new gene. This is why the output of a process by a cell is very dynamic.

The ethical, legal & social issues of integration of genetics in contemporary medicine are privacy and confidentiality of personal / genetic information; protection from discrimination health and general insurance / job / schooling / social; access and equity to genetic services; quality assurance; protection from risks in clinical trials; gene therapy; protection from genetic environmental hazards.

The new biology of genetics has revolutionised medical sciences. Hence, it is essential to integrate genetics into contemporary medical education. It will help us in thinking and understanding a disease right from the stage of its origin and will thus open new windows for treating these diseases and improving the health of mankind.

A CLINICAL RESEARCH ENTERPRISE

Dr AV Kurpad*

The thought of Research Institute at St. Johns Medical College had started with a specific mission related to significant impact on life style related disorders in India through basic and clinical research, promotion of evidence based health care and population health research initiatives. They had started with a clear and integrated agenda in terms of teaching, research and services to patients or public and developing capability matrix starting from cell, sub cell to community and integration of research agenda with operational and translational research partners and government and industry. The Research Integration within the broader perspective includes the environment (water and land use, agriculture), economics (access to food, health, insurance, feeding programs) knowledge translation. This could be achieved by building platforms i.e. Biochemistry, Epidemiology, Genetic & Clinical trials and data management and by calculating the total space required.

Keeping the above basic needs in mind research on chronic disease were started. Priority was given for developing nutritional epidemiology based on surveillance systems for chronic disease - networks, registries (mortality and cause of death) and prospective cohort studies- define risk refine the understanding of risk. The frame work of their study method in different topics were like less muscle mass in

*Dr. A.V. Kurpad is the Dean, St. John's Research Institute, Bangalore and the Professor of Physiology and Nutrition at St. John's Medical College Bangalore. He is also an Adjunct Professor of Medicine at the University of Minnesota, USA, and Curtin University of Technology, Perth, Australia. He is a Fellow of the National Academy of Medical Sciences, India.

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Indians compared to their fat, and why Indian babies have low birth weight. Epidemiology plays an important role in any study.

Registrar General of India's Sample Registration System (SRS), a large routine demographic survey, is the country's primary system for the collection of fertility and mortality data. The Million Death Study in India is an ambitious project being undertaken by the SRS in close collaboration with the Centre for Global Health Research at the University of Toronto, leading Indian and other overseas academic institutions, and the Indian Council of Medical Research. The study will use the SRS framework to obtain information, from a reasonably large cohort of deaths (1 million deaths over 16 years), on the underlying causes of child and adult deaths, as well as key risk factors for these death (behavioral, physical, environmental, and, Council of Medical Research. The study will use the SRS framework to obtain information, from a reasonably large cohort of deaths (1 million deaths over 16 years), on the underlying causes of child and adult deaths, as well as key risk factors for these death (behavioral, physical, environmental, and, possibly, genetic). SRS monitors nearly 14 million people in 2.4 million nationally-representative Indian households and about 300,000 deaths from 1998-2003 and some 700,000 deaths from 2004-2014 are expected.

Emphasis has to be given to priority of research in the area of nutritional biology in the area of measure food and nutrient intake (quality), measure physical activity (quality), understand regulation, understand adaptation and leverage molecular and metabolic approaches. Rastogi et al., in 2004 elucidated the association of various physical activities with Acute Myocardial Infarction (AMI), In which

they had conducted a hospital-based case-control study and collected data from 350 cases of acute myocardial infarction and 700 controls matched on age, gender, and hospital in New Delhi and Bangalore. Leisure-time exercise, including as much as 35-40 minutes per day of brisk walking, was protective for coronary heart disease (CHD) risk and sedentary lifestyles were positively associated with risk of CHD. Given limited resources for care of CHD in India and the important role of physical exercise in disease risk in urban India, improvements in physical activity should be promoted. Some of the quotes on historical asides on muscularity in Indians; Richard Burton: 1842-1849, Goa and the Blue Mountains: short and small, with concave chests, the usual Indian calfless leg and a remarkable want of muscularity; William Howard Russell: 1858-1859, My Diary in India: lean, hollow-thighed, calfless. Problems in the area of anthropometry under- and well-nourished; anthropometry and muscle strength vs. insulin sensitivity; putting ecology on the agenda; synergistic action of low muscle and high fat has to be addressed. As an indication for the low weight of the babies following points were discussed; to set a target of reducing incidence of intrauterine growth restriction (IUGR) from its current value to about 15%, mean birth weight needs to increase by about 200 gm, need to think about targeted interventions on undernourished mothers early inpregnancy and what happens to baby body composition. Regarding the diet and Pregnancy the apt examples can be given from the following studies; modest increases in maternal weight gain and fetal growth following protein/ energy supplementation (Kramer, 1993) and an overall odds ratio of 0.77 (95% CI 0.58, 1.01) for reducing IUGR (de Onis et al, 1998). Coexistence of risk of low birth weight (LBW) or IUGR associated with essential fatty acid docosahexaenoic acid (DHA) and vitamin B12 intake or status observed

in the Indian sub-continent also requires further examination. There is a significant protective effect of higher maternal education (beyond high school). Optimal weight gain during pregnancy and a desirable fetal outcome may be a result of synergistic effects of improved food intake, food supplementation, improved micronutrient intake, education and the environment of the pregnant woman and her family. Pertaining to this topic the following key questions could be addressed; is there a decline in methionine flux in pregnant mothers with low Vitamin B12 status; is there a reduction in remethylation of homocysteine rates in low Vit. B12 status mothers; is there an accompanying decline in cysteine availability in Vitamin B12 deficient mothers.

For any research right people have to be involved and finally it is must to have a good leader. Basic biology drives public health policy in developed countries. "for every complex problem there is a solution that is simple, elegant and wrong"- that is to say that research enterprise is possible.

ROLE OF PLATELETS IN ATHEROSCLEROSIS (AT), THROMBOSIS AND STROKE

Dr. Gundu HR Rao *

The knowledge of physiology and biochemistry involved in the modulation of atherosclerosis (AT), thrombosis and stroke and information about the anti-platelet therapies are very imperative.

Platelets play a very important role in the pathogenesis of atherosclerosis, thrombosis and stroke. Major players include Platelets, Fibrinogen, Thrombin and Coagulation Factors. Factors modulating thrombogenesis are anti thrombogenic and thrombogenic factors; vasoactive factors released from the endothelial cells that promote vascular constriction and vascular relaxation. Factors contributing to vascular constriction are cyclooxygenase dependent EDCF, hypoxic induced EDCF and endothelin. Factors contributing to vascular relaxation are prostacylin, adenosine and nitric oxide.

The response of platelets to tissue injury involves the interaction of platelets with surfaces and the adherence of platelets to each other. When platelets are exposed to surfaces (such as collagen) or to particulate stimuli (such as antigen-antibody complexes, or polystyrene particles, viruses, or bacteria in the presence of γ-globulin), the platelets adhere to them and release some of their constituents. Among the materials released are ADP, AMP, serotonin, and a factor which increases the permeability of vessels in the microcirculation.

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In Biology, signal transduction refers to any process by which a cell converts one kind of signal or stimulus into another. Most processes of signal transduction involve ordered sequences of biochemical reactions inside the cell, which are carried out by enzymes and activated by second messengers, resulting in a signal transduction pathway. Integrins are produced by a wide variety of cell types, and play a role in the attachment of a cell to the extracellular matrix (ECM) and to other cells, and in the signal transduction of signals received from extracellular matrix components such as fibronectin, collagen, and laminin. Ligand-binding to the extracellular domain of integrins induces a conformational change within the protein and a clustering of the protein at the cell surface to initiate signal transduction. Integrins lack kinase activity, and integrin-mediated signal transduction is achieved through a variety of intracellular protein kinases and adaptor molecules.

Important differences exist between integrin-signaling in circulating blood cells and that in non-circulating blood cells such as epithelial cells. Integrins at the cell-surface of circulating cells are inactive under normal physiological conditions. For example, cell-surface integrins on circulating leukocytes are maintained in an inactive state to avoid epithelial cell attachment. Only in response to appropriate stimuli are leukocyte integrins converted into an active form, such as those received at the site of an inflammatory response. In a similar manner, it is important that integrins at the cell surface of circulating platelets are kept in an inactive state under normal conditions to avoid thrombosis. Epithelial cells, in contrast, have active integrins at their cell surface under normal conditions, which help maintain their stable adhesion to underlying stromal cells, which provide appropriate signals to maintain their survival and differentiation.

Antithrombotic therapy in appropriate patients reduces the morbidity and mortality associated with stroke. The use of antithrombotic agents to prevent thromboembolic events in patients with valvular heart disease is common.

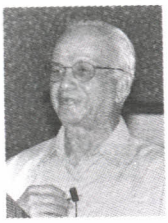
Definite evidence has confirmed that platelets play a major role in thrombus formation and embolization, especially in the arterial system. In addition, increasing evidence has now shown that platelet deposition and thrombus formation can contribute to the growth and progression of atherosclerotic plaques. For these reasons, considerable attention has been focused recently on the question of whether drugs that inhibit certain platelet functions can prevent or modify the course of arterial thromboembolic disease and atherosclerotic disease in humans.

Ultimately, a sensitive and specific, yet rapid and inexpensive screening test that detects predisposition to thrombosis or bleeding, be it sensitive to aspirin, thienopyridine, or GP IIb/IIIa antagonists, would be clinically useful.

A platelet reactivity POC instrument; patented by the author, needs only a fingerpick sample, no anticoagulants, no agonists, no pipetting, it is fast, easy to operate and 510(k) application filed placor prt - methodology.

To conclude South Asians have the highest incidence of Coronary Artery Disease (CAD) compared to any other ethnic groups. (New Delhi 10%, Boston 2,5%). Apart from the known risk factors such as hypertension, diabetes, and altered lipid metabolism, platelets play significant role in atherosclerosis (AT), CAD and stroke. Early diagnosis of the disease manifestation, detection and management of risk promoters significantly reduces the events associated with AT, CAD and Stroke. Aspirin alone, at medium or low doses (80 160 mg) prevents cardiovascular events related to MI, angina or stroke significantly.

CURRENT DILEMMAS IN MEDICINE



Dr P R Krishnaswamy*

All aspects of medicine are now being reexamined critically since the practice of medicine is uncertain; there is unequal delivery of health care and tremendous increase in the cost of medical education. Some feel that medical schools are not producing enough doctors; taking too long to train them and that newly-graduated physicians are academically oriented rather than practice oriented or learn too much of medical science and not enough art of medicine. Some think medical research occupies the time of physicians who otherwise would be in practice and because some believe that too much research is basic and undirected and too little is applied and directed.

Questions to be asked are; do we need basic science? if so, how much? and why? The most dramatic event of the century in medicine was transplantation of the human heart. The newspaper accounts and the television interviews dealt with the surgical procedures in the operating room, but the complete story should account for every step and procedure from the time that patient entered the hospital until he left; it should tell us what made each step and each procedure possible. If we look back step by step into the role of diagnostic instruments for the diagnosis of

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question needs to be answered by directing it towards more questions; was Roentgen, in discovering x-rays, looking for a way to study the heart ?; was Einthoven, in discovering the string galvanometer, searching for a way to diagnose arrhythmias?; was Werner Forsmann, in performing the first cardiac catheterization, looking for a way to measure left ventricular end-diastolic pressure? and the answer is definitely a no.

After diagnosis came the decision to perform transplantation. Basic studies on auto- regulations of the heart that were done by Starling, and led to Starling's law of the heart, had to precede transplantation. Starling's law of the heart states that the greater the volume of blood entering the heart during diastole (end-diastolic volume), the greater the volume of blood ejected during systolic contraction (stroke volume) and vice-versa.

Development of the science of immunology and knowledge of rejection by the body of foreign tissue was required for the long term survival of the heart. It required the technique of cross-matching of blood and tissue cells. It involved the development and use of immunosuppressive drugs. After the diagnosis and the decision to operate came the operation itself. The aspects to be thought for an operation are particular anesthetic use; heparin; aspirin; asepsis; bacteria; antibiotics and positive pressure ventilation. These studies of the origins of a tremendous body of knowledge could never have been done on schedule by contracts. It is important that basic discoveries be promptly and wisely applied to solve practical problems. It is crucial for a society or culture to understand the nature of the creative process and to provide generously for its support.

Cellular chemistry as the foundation of all medical science is usually submerged and obscured by traditional attitudes and the attention to specific and urgent problems. The simple truth may escape both physicians and scientists. Physicians are inclined to action. This is portrayed through the parable of physician and biochemist (scientist) which intends war on disease must be fought on several fronts.

When we reflect on the progress of biomedical science in the past century it makes us to think of scientists as generations of hunter-gatherers, namely microbe hunters, vitamin hunters, enzyme hunters and gene hunters. The first two decades of the 20th century were dominated by the microbe hunters. They found the microbes responsible for the dreaded scourges of tuberculosis, cholera, diphtheria. But there remained terrible diseases for which no microbe could be found: scurvy, pellagra and rickets. These diseases proved to be due to the absence of trace substances in the diet, called vitamins. And so in the 1920s and 1930s, the microbe hunters were succeeded by a generation of vitamin hunters. By the 1940s, most of the vitamins had been discovered and nutritional science was in its twilight. The question was, what these vitamins do, so there was the transition from vitamins to enzymes. In the 1940s and 1950s, we enzyme hunters occupied centre stage, showing how the vitamins attached to enzymes enabled them to perform the vital metabolic functions essential for growth and reproduction.

Enzyme hunters have been replaced by gene hunters, the genetic engineers and biotechnologists. Biotechnology, with its fabulous contributions to medicine,

PERSPECTIVES IN INFECTIOUS DISEASES RESEARCH IN INDIA

Dr. John Kenneth*

A disease may be endemic when the infective condition is present in a community at a steady level. The epidemic may be acute when there is an increased number of new infections or acute on chronic when there is an increased number of existing infections. An emerging infection is the appearance of a hitherto unknown infection in that community and a re-emerging infection is reappearance of an earlier known infection. The etiology of an infectious disease is localized to a broad class of microorganisms & reservoir or source.

Infectious disease remains a security challenge & has been present during wars & famine. It is a global threat due to the emergence of new infectious disease, resurgence of older disease with resistance to a growing number of antibiotics. Throughout history infectious diseases have been called pestilences, pests & plagues since ancient times. In the 1960s with improved sanitation, medicine & drugs the U.S. Surgeon General stated "The war against infectious diseases had

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thought to be won". But the war has not been won & still continues, as the campaign to eradicate infectious disease is ongoing with the pathogens exhibiting remarkable resilience and flexibility. Around twenty well-known maladies such as TB, Malaria, Cholera & influenza have re-emerged or spread & at least 30 diseases not previously known such as Ebola, Hantavirus, SARS & HIV have emerged. The global burden of disease from communicable disease is 42.8%, non-communicable disease is 43.2% and from injuries 13.9%. Various National Health Policy have been implemented from 2002 i.e. eradicate polio & yaws (2005), eliminate leprosy by 2005, eliminate Kala Azar by 2010, eliminate lymphatic filariasis by 2015, achieve zero level growth of HIV/AIDS by 2007 & reduce mortality by 50% on account of TB, Malaria & other vector borne diseases.

Among an estimated 57 million people who died world wide in 2002, infectious disease caused 14.9 million deaths. Twenty previously well known diseases have reemerged. Thirty diseases not previously known to be infectious have been identified in the last three decades. The out break of chikungunya fever 1963-2000 was limited to very few places in India but the outbreak in 2006-07 covered southern & west India completely. There have been outbreaks of various diseases such as Rickettsial infections, Brucellosis, avian flu, non typhoid salmonellae (NTS). He added saying that drug resistance in different microorganisms has seriously limited the treatment options. MDR-TB was observed in 2%, no resistance to rifampicin & streptomycin was observed in 1% & 17% of cases respectively. Extensively drug resistant TB [XDRTB], a subset of MDR-TB, with resistance to fluoroquinolones and any one of the three injectables i.e., kanamycin, capreomycin, amikacin has emerged. Various other organisms have also developed drug resistance e.g. Strep. pneuomoniae to pencillin, Staph

aureus to methicillin, P. falciparum to chlroquine & mefloquine & Shigella dysenteriae to all known drugs. Poor countries lack money & enough health care workers to distribute needed drugs.

Genetic mixing of transmission has lead to emergence and back switches of human viruses in pigs. Both doubly mixed (pig-human) & triply mixed (pig-human-avian) viruses have been isolated. Mixing is suspected to have occurred in the 1918 influenza pandemic. Such interspecies genetic mixing has resulted in outbreaks of new infectious disease in the community. Bioterrorism & bio-warfare are not new concepts & have been present from ancient times.

Governments after attempting to keep disease outbreaks under control have been losing more than 10% of working age population to HIV in Africa or the 1994 pneumonic plague in India leading to economical consequences. This on the long run retards industrial development, reduces agricultural production, devastates education, weakens the military & undermines political stability.Concerning treatment outcomes diagnostics; prognostic etc can be carried out in institutions teaching or practicing Medicine/Medical Microbiology. The variations in clinical features, treatment outcomes and diagnostic measures can be practiced by virtually all hospitals which require minimal equipment & manpower.

To conclude, both clinical research & epidemiological research are important; involving population based study about incidence, prevalence, transmission. This requires a large population base, excellent rapport with community, increased expenditure, committed & knowledgeable researchers & field workers. The lacunae can be overcome by surveillance; eternal vigil which gives freedom from large scale problems. Various research activities can be funded by public sectors.

COMPARATIVE STUDY OF EFFICACY AND SAFETY OF IRON POLYMALTOSE COMPLEX VERSUS SODIUM FEREDETATE IN IRON DEFICIENCY ANEMIA

DR. Ashok Krishna V.S

Department of Pharmacology

Background and objectives:

Iron polymaltose complex and sodium feredetate are two special iron preparations developed to overcome the limitations associated with conventional ferrous salts in the treatment of iron deficiency anemia. There is paucity of literature and clinical experience with these two drugs in India. Hence we planned to conduct this study. The objective of this study was to compare the efficacy and safety of iron polymaltose complex with sodium feredetate in patients with iron deficiency anemia.

Materials and methods:

Sixty patients of iron deficiency anemia were enrolled into this study with 30 patients each in two groups. Patients In one group received iron polymaltose complex 100mg and the other group received sodium feredetate 100mg, once daily after food at bed time for a period of 60 days. Response to treatment was assessed by measuring hemoglobin level, serum iron level, total iron binding capacity and composite score of physical wellbeing at baseline, day 30 and day 60. Any adverse effects occurring during the treatment were recorded.

Results:

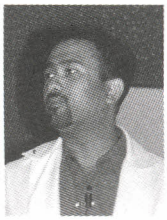
In our study, both iron polymaltose complex and sodium feredetate significantly improved hemoglobin level, serum iron level, total iron binding capacity and symptoms of iron deficiency anemia, both at the end of 30 days and 60 days as

compared to baseline. As compared to sodium feredetate, iron polymaltose complex produced significantly greater improvement in hemoglobin level, serum iron level and total iron binding capacity. But the improvement in symptoms was similar in both groups. Iron polymaltose complex was associated with fewer upper gastro intestinal adverse effects as compared to sodium feredetate.

Conclusion:

Iron polymaltose complex and sodium feredetate are effective drugs for the treatment of iron deficiency anemia. Iron polymaltose complex is better than sodium feredetate in terms of efficacy and safety.

COMPARISON OF SUBTENON'S NAESTHESIA WITH PERIBULBAR ANASTHESIA IN MANUAL SMALL INCISION CATARACT SURGERY



Dr. John Kurian
Department of Ophthalmology

Blindness due to cataract presents an enormous problem in India not only in terms of human morbidity but also in terms of economic loss and social burden. Retrobulbar anaesthesia was commonly used for cataract extraction Peribulbar anaesthesia replaced retrobulbar anaesthesia because of serious complications. Even with a two injection technique peri bulbar anaesthesia has sometimes an excessive rate of imperfect blockade and pain. In this context subtenon anaesthesia is gairung popularity providing a quicker onset of anaesthesia, better akinesia, more consistency in effectiveness and better patient compliance.

Objectives

1) To compare the efficacy of subtenon anaesthesia and peribulbaranaesthesia in MSICS with respect to intra operative pain, akinesia, lid movements.
2) To compare the complications of sub tenon and peribulbar anaesthesia.

Materials and methods

A prospective study of 100 patients who underwent MSICS was done, of which 50 of them underwent surgery by subtenon anaesthesia and 50 by peribulbar anaesthesia. The efficacy and safety of two methods of anaesthesia in MSICS with respect to intraoperative pain, akinesia, lid movements and complications were compared.

Results

The percentage of patients with grade 0 pain in subtenon group was 70 % as compared to 30% in peri bulbar group. None of the patients experienced grade 4 pain in subtenon group but 4% of peribulbar group patients experienced grade 4

pain. The percentage of patients with grade 0 akinesia in subtenon group was 0 % as compared to 62% in peribulbar group. Grade 0 lid movements were experienced by 70% in subtenon group and 88% in peribulbar group. 61 % of subtenon group had grade 0 chemosis and 64% in peribulbar group had the same. 44% of subtenon group and 64% of peribulbar group had grade 0 SCH. .

Conclusion

Intra operative pam was dramatically lower in sub tenon group of patients with significantly fewer patients expenencing unacceptable levels. of pain. Peribulbar anaesthesia had an upper hand in terms of intra operative akinesia when compared with subtenon anaesthesia. Intra operative lid movements were slightly more in subtenon group of patients. The incidence of chemosis was almost comparable in both the groups. Subconjunctival haemorrhage was more in subtenon group as compared with patients in peribulbar group.

HEARING RESULTS FOLLOWING CANAL WALL DOWN MASTOIDECTOMY IN ATTICO-ANTRAL DISEASE

Dr. Afzal V.P

Department of Otorhinolaryngology

Background and Objectives:

Chronic Suppurative Otitis Media, Attico-Antral type is one of the most common causes of deafness in developing countries. It is most commonly treated by Modified Radical Mastoidectomy. Reconstruction of the conductive hearing apparatus is also performed simultaneously. Reports on hearing results of this combined procedure are few. The objective of this study is to evaluate the hearing results following canal wall down mastoidectomy with type III tympanoplasty in attico antral disease.

Materials and Methodology:

Our study included 60 patients with Attico-Antral disease. Pre-operative audiometry was done for all the patients. All of them were subjected to Modified Radical Mastoidectomy with type III tympanoplasty. The patients were divided into two groups based on the material used for reconstruction of conductive apparatus. In group- A autograft incus was used and in group B homograft septal spur cartilage was used.

Observation and Results:

The mean pre-operative A-B gap was 30.4 dB in Group A and 34.3 dB in Group B. Post-operative audiometry was done at the end of three months after surgery. The mean post-operative A-B gap of Group A and Group B was 22.1 dB and 23 dB respectively. Overall the patients showed fair hearing results when graded as per Wehr's classification. There was statistically no significant difference between the two groups with respect to hearing gain.

Conclusion:

Modified Radical Mastoidectomy when combined with type III tympanoplasty using easily available ossicle or cartilage can produce fair hearing results.

A STUDY ON SERUM MAGNESIUM, RUCTOSAMINE, LIPID PROFILE AND MICROALBUMINURIA IN DIABETIC RETINOPATHY

Dr. Navin S

Department of Biochemistry

Back Ground & Objective

Uncontrolled hyperglycemia has been recognized in association with high incidence of microvascular complications like retinopathy and nephropathy in Type II diabetes mellitus. In type I diabetes there is demonstrated relationship between serum magnesium proteinuria and presence of retinopathy. This study aimed to find the effect of serum magnesium, glycemic control lipid profile and microalbuminuria in the presence of retinopathy.

Materials & Methods

The study group comprised of 60 Type II diabetes mellitus patients within the age group of 46-79 years attending R.L.Jalappa Hospital. They were further divided into two subgroups: - Subgroup 1 (Control n=30) (fructosamine <2.67±9 mmollL) age matched Controlled Diabetic Group without Retinopathy and Subgroup2 (n=30) Diagnosed Diabetes with Retinopathy. After thorough examination of the subjects as per the proforma, the following tests were done in both study and control groups.

2) Serum Magnesium by Xylidyl Blue Method
3) Serum Lipids: Triglycerides (TG) and Total Cholesterol(TC) by enzymatic method; High Density Lipoproteins (HDL) by precipitation method and Low Density Lipoproteins (LDL) by Friedwald formula
4) Serum Fructosamine by Nitroblue tetrazolium colorimetric (NBT) method
5) Macroalbuminuria was ruled out by heat coagulation test on patient's urine.
6) Microalbuminuria detected by Micral Test (dipstick method)
7) Retinopathy was detected and graded into Non-Proliferative Diabetic Retinopathy (NPDR) and Proliferative Diabetic Retinopathy (PDR) by direct Ophthalmoscopy with the help of ophthalmologist. Macroalbuminuria positive subjects, hypertensive's, subjects on drugs affecting renal function and retinal vascularity were excluded.

Results

The results obtained were analyzed statistically using independent student 't' test with SPSS statistical software package. The average concentration of magnesium (mg/dl) in groups I (controls), and group II (diabetic retinopathy) were 2.16±0.26 and 1.43±0.17. The decreased serum magnesium (hypomagnesaemia) levels were observed in diabetic retinopathy and were significantly correlated (p=0.022) as compared to controls. The fructosamine levels were higher in diabetic retinopathy and correlated highly significantly as compared to control (p <0.001). The serum concentration of TC and LDL showed marked increase in diabetic retinopathy and highly significantly correlated (p<0.001) as compared to controls, although there was mild increase in serum TG it was highly significantly correlated «0.001). There was decrease in HDL levels in diabetic retinopathy and correlated significantly (0.02) as compared to controls. Microalbuminuria was found in 64.6 %(n=19) of diabetic retinopathy patients

Conclusion

Uncontrolled hyperglycemia and Hypomagnesaemia is associated with microvascular complications like retinopathy. Fructosamine is an indicator of short-term blood glucose concentrations. Microalbuminuria is associated with diabetic retinopathy in Type II diabetic patients and is a reliable marker of retinopathy. Diabetic patients who have microalbuminuria and hypomagnesaemia should be under periodic ophthalmological surveillance for prevention of retinopathy by stringent glycemic control.

OUTCOME OF MECONIUM ASPIRATION SYNDROME

Dr. Sandeep. B
Department of Paediatrics

Study design:

This is a prospective study to know the outcome of Meconium Aspiration Syndrome in both the inborn & out born admissions to RLJH attached to Sri Devaraj Urs Medical College during the study period from December 2007 to November 2008.

Method:

60 babies of the inborn & out born admissions with Meconium Aspiration Syndrome were taken into the study who fulfilled the inclusion criteria . Needed investigations were done & treatment was followed up for a period of six months to see for the outcome and development of morbidities.

Results:

Of the 60 babies taken into the study, 45 were in born & 15 were out born. There was one mortality and remaining 59 babies were followed up subsequently and it was found that 7 babies had developmental delays, 12 developed bronchopneumonia , 4 developed bronchiolitis and in 1 baby a coincidental finding of Atrial septal defect was found.

Conclusion:

Meconium aspiration syndrome is responsible for a large number of morbidities in the new born period . Early and timely interventions can prevent the immediate mortality as well as long term morbidities.

NORMATIVE STUDY OF BRAIN STEM AUDITORY EVOKED POTENTITALS IN YOUNG ADULTS

Dr. Shashiraj. H.K.

Department of Physiology

Background and objectives:

BAEP are potentials recorded from ear and vertex in response to brief auditory stimulation to asses conduction through the auditory pathway upto the level of midbrain. BAEP comprises of five or more waves within ten milliseconds of the stimulus and three interpeak latencies. Each individual wave and interpeak latencies provides information about an area of auditory pathway starting with cochlear nerve to the level of inferior colliculi. Recently these potentials have been widely studied in audiology, neurology neonatology and anaesthesiology. These potentials tend to vary with various ethnic groups. Since India has a widely diverse ethnic population, this study was undertaken to prepare normative data pertaining to local population and normalize the results with variables such as gender and anthropometric measures like head size which could have an effect on these recordings.

Materials & Methods :

In this randomized study,lOO normal subjects consisting of 50 males and 50 females were selected. BAEP was recorded using EMG RMS PK II machine. Head measurements were taken with a measuring tape.

Results:

The results were analyzed by descriptive methods. Males showed greater head measures and greater wave and interpeak latencies than female subjects with a significant p value of less than 0.001.

Conclusion :

All wave and interpeak latencies were greater in males than in females which could be because of bigger head size measurements in males.

STUDY OF PRIMARY CESAREAN SECTION IN MULTIPAROUS WOMEN

Dr. Avinash Patil
Department of Obstetrics and Gynaecology

Objectives:

To study the indications for the primary cesarean section in multiparous women. To study the maternal and fetal outcome after primary cesarean section in multiparous women.

Material and methods:

This is prospective and retrospective study of 5 years from 1st June 2004 to 31st may 2009. 100 cases of primary cesarean sections in multipara done in R L Jalappa Hospital and Research center attached to Sri Devaraj Urs medical college, Kolar were studied and analysed. This study includes the multiparous women who had delivered vaginally in previous pregnancies and. are undergoing cesarean section for the first time.

Results:

Majority (42%) of patients were from the age group 21-25yrs. 33% patients were booked cases and 67% were unbooked. Anemia (57%), antepartum hemorrhage (24%), mal presentations and severe pre-eclampsia (20%) were most frequently encountered antenatal complications In multiparous women. Antepartum hemorrhage (24%) and fetal distress (24%) were the common indications for cesarean section in multiparous women. There were no cases of maternal mortality in our study. Paralytic ileus and puerperal sepsis were more common post operative morbidity and seen in 3 cases each. 38 (40%) babies were admitted in NICU. Most common indications for NICU admissions were meconium aspiration syndrome and prematurity. Perinatal mortality in the study was 15.6% and among them Antepartum hemorrhage has the highest perinatal mortality rate of 56.25%.

Conclusion:

The most common indications for cesarean sections in multipara are antepartum haernorrhage, fetal distress and malpresentations. Cephalopelvic disproportion in multipara can be more significant and dangerous than in primipara because delay in recognition leads to obstructed labour and second stage cesarean sections which carry mor- maternal and fetal morbidity. Good antenatal and intrapartum care and early referral will reduce the maternal and perinatal morbidity and mortality in multipara. Multipara in labour should be given the same attention as primigravida.

SEROLOGICAL STUDY OF BRUCELLA INFECTIONS IN THE HIGH RISK POPULATION AND IN PATIENTS WITH FEVER IN AND AROUND KOLAR

Dr. Dhanalaxmi Aniyappanavar.

Department of Microbiology

Background and Objective:

Brucellosis is an important zoonosis of public health importance. It is caused by 4 species of gram negative bacilli belonging to the genus Brucella. Live stock constitute the reservoirs. Man gets infected from goats, sheep, cattle, buffaloes and swine. It is acquired by consumption of food that harbor the organism. Close contact with animal tissues containing brucellae, also transmit infection. Many people in India live in close proximity with the live stock, and are exposed to the risk of brucellosis. Brucellosis inflicts people in their active years and can run a chronic course. We conducted a serological survey among the people exposed to the risk of brucellosis and tested serum samples from patients admitted with pyrexia of unknown origin to know about brucellosis in Kolar region where we do not have any information.

Materials and Methods:

The study included 154 subjects who were apparently exposed to risk of brucellosis such as veterinary personnel, farmers in close contact with the cattle, shepards and abattoir workers and 100 patients with pyrexia of unknown origin admitted to R L Jalappa Hospital and Research Centre between November 2007 to May 2009. Blood was collected from the subjects and the patients, and the sera were subjected to Rose Bengal Plate Test(RBPT), Standard Tube Agglutination Test(SA T),Standard agglutination test with 2Mercaptoethanol (2ME) test, IgG and IgM ELISA test. Statistical analysis included the calculation of Odd's ratio, 95% confidence interval and p-value by chi square test.

Results:

Among the 154 individuals at risk, screened by us, we found 15 (9.7%) individuals were serologically positive for brucella infection. We found a high seropositivity

among the veterinarians (30.76%) followed by abattoir workers (9.67%), and animal owners (3.79%). Among the seropositives, we could classify the serological reactions into 3 categories based on the results of RBPT, SAT, 2ME, IgG and IgM ELISA tests as: Acute brucellosis (66.6%), Chronic brucellosis (13.3%) or Past infection (20%). The risk factors, drawing blood and conducting parturition of the reservoir animals had a positive association with acquisition of brucella antibodies. The symptoms of low back ache, myalgia, joint pains also showed a positive association with serologically positive individuals. We detected 1 patient (1 %) of brucellosis among 100 patients with PUQ tested. This patient was treated for acute brucellosis.

Conclusion:

In Kolar region, a high seropositivity was found among people exposed to risk factors of brucellosis. Drawing blood from animals and attending the parturition of animals had a positive co- relation brucellosis. Symptoms such as, myalgia, low backache and joint pains were significantly common in serologically proven individuals. Brucellosis was diagnosed in a patient with PUQ admitted to hospital at Kolar. Our findings highlight the importance of serological surveys to detect brucellosis in the high risk people and diagnosing brucellosis among patients with PUQ. It is essential to detect brucellosis and institute treatment in both these groups of people to prevent complications due to brucellosis.

HELICPOBACTER IgA ANTIBODY TITRE AS A PREDICTOR OF PROGNOSIS IN H.PYLORI ASSOCIATED HOLLOW VISCUS PERFORATION

Dr. Harish.B.Kakkilaya
Department of General Surgery

Study design :

Patients with hollow viscus perforation often present with surgical emergency at Sri Devaraj Urs Medical College. It is planned through this study to evaluate whether the titers of Ig A to the organism can help in predicting the prognosis.

Method:

50 cases of peritonitis secondary to hollow viscus perforation were taken into study which fulfilled the inclusion and exclusion criteria. Rapid urease test was performed on samples collected intraoperatively, IgA antibody titre against H pylori were estimated in patients who were urease positive and then put on anti H pylori treatment. Three months later IgA antibody titre test were repeated

Results:

In our study 48% of patients showed positive for Helicobacter pylori through rapid urease test and 75% of duodenal ulcers were positive for Helicobacter pylori. It became evident from the result that IgA had higher specificity compared to rapid urease test. Among the 6 cases that could be followed up 5 showed negative for Helicobacter pylori. And the one who showed positive on follow up was a defaulter, who had not completed anti Helicobacter pylori therapy.

Observations:

Our study inferred that rapid urease ,being highly sensitive could be used for screening test for patient with history of gastritis. But the drawback is the need for endoscopy to obtain a biopsy which is an invasive method. On the other hand, IgA is highly specific. Considering the whole picture including the cost effectiveness , patient compliance and results, IgA could be used as a diagnostic test and to monitor the effictiveness of treatment by repeating the IgA following the anti Helicobacter therapy.

A COMPARATIVE STUDY OF INTRAVENOUS LIDOCAINE AND INTRAVENOUS SUFENTANIL IN ATTENUATING THE HEMODYNAMIC RESPONSE TO LARYNGOSCOPY AND TRACHEAL INTUBATION

Dr. Hemanth Kumar J
Department of Anaesthesiology

Background and Objectives

Laryngoscopy and tracheal intubation in adults cause stress response manifested by a rise in heart rate and blood pressure. Intravenous lidocaine has been used to suppress this stress response. Sufentanil a opioid, a fentanyl congener is being increasingly used to attenuate this response. In this clinical comparative study we compared these two drugs in attenuating the stress response to laryngoscopy and intubation.

We compared the effects of intravenous lidocaine against sufentanil in attenuating the hemodynamic response to laryngoscopy and intubation in relation to

- Heart rate
- Blood pressure-systolic and diastolic
- Mean arterial pressure
- Rate pressure product-heart rate multiplied by systolic blood pressure

Methods:

100 patients belonging to ASAI and ASA2 posted for surgeries under general anesthesia were randomly divided in a double blind fashion into 2 groups of 50 each. Both groups were premedicated with intravenous glycopyrolate 0.005mg/kg and midazolam 1mg. Group A -received intravenous lidocaine 2% 1.5mg/kg and group B received lg/kg sufentanil 3 minutes before laryngoscopy and intubation. Both groups were induced with 2.5% thiopentone 5 mg/kg and 1.5mg/kg succinylcholine. Laryngoscopy was done and intubation accomplished within 20 seconds. Heart rate, blood pressure, mean arterial pressure were recorded before induction (baseline) and at 1, 3, 5 and 10 min after intubation. Statistical analysis was done using student't' test (paired) and P value obtained.

Results:

Both groups showed attenuation of stress response. Maximum increase in heart rate in lidocaine group was at 3rd minute a 18.6% increase from baseline and maximum increase in sufentanil group was at 1st minute a 12.09% increase from baseline. It was clinically and statistically significant (P<O.OOI). Maximum increase in systolic blood pressure in lidocaine group was 22.8% from baseline and in sufentanil group it was only 12.15% (P<0.005). Sufentanil group showed a earlier fall in all the parameters to the baseline value compared to lidocaine group.

Interpretation and Conclusion:

Both sufentanil and lidocaine attenuate the stress response to laryngoscopy and intubation. When both these drugs were compared sufentanil attenuated the stress response to laryngoscopy and intubation better than lidocaine and afforded a good hemodynamic stability.

CT EVALUATION OF ANATOMICAL VARIATIONS OF PARANASAL SINUS REGION AND THEIR CLINICAL IMPORTANCE

Dr. Jaiger. C

Department of Radio Diagnosis

Aims and Objectives:

To evaluate the anatomical variations of para nasal sinus region by CT and to assess their clinical importance.

Materials and Methods:

Over a period of 18months, 142 patients referred for CT scan of PNS region to R.L Jalappa hospital were evaluated for the presence of normal variants of the paranasal region. Unenhanced CT of the PNS was performed for these patients in the coronal plane, complemented by axial views in selected cases.

Results:

Deviated nasal septum was the most common variation in. 77(54.3%) followed by middle concha bullosa in 66 (46.5%) patients. Other variations found were Paradoxical middle turbinate in 22 (15.5%), curved uncinate process in 21 (14.7%), overpneumatized ethmoidal bulla or giant bulla 12 (15.5%), superior concha bullosa in 20 (13.5%), prominent Agger Nasi cells in 16 (11.2 %), haller cells in 10 (7%), onodi cells in 3 (2%), maxillary sinus septae in 12 (8.5%) and pneumatization of uncinate process in 5 (3.7%) patients. 94 (66%) patients had PNS mucosal abnormalities suggestive of sinusitis and 48 (34%) patients had no mucosal changes. Anatomical variation were seen in 73 (77%) patients out of 94 patients with PNS mucosal abnormalities and 42 (85%) out of 48 patients without PNS mucosal abnormalities.

Conclusion:

The presence of anatomical variants does not indicate a predisposition to sinus pathology but these variations may predispose patients to increased risk of intraoperative complications. The radiologist must pay close attention to anatomical variants in the preoperative evaluation and provide a road map to the surgeon and help avoid possible complications and improve success of management strategies.

A CLINICO-EPIDEMIOLOGICAL STUDY OF PIGMENTED PURPURIC DERMATOSES

Dr. Lavanaya. M.S

Department of Dermatology, Venereology & Leprosy

The Pigmented purpuric dermatoses (PPD) comprise a group of dermatoses most commonly located on the lower extremities and have a chronic and relapsing course. There is paucity of studies regarding the clinical patterns of pigmented purpuric dermatoses and also about the possible predisposing and underlying factors and associated disease

Objectives:

1. To study the various clinical patterns of Pigmented purpuric dermatoses.
2. To evaluate the probable predisposing and underlying factors and associated diseases

Materials and methods:

The study was carried out between December 2007 to March 2009. All the patients who reported to the department of dermatology fulfilling the inclusion criteria were evaluated for the study. A detailed history regarding onset, duration and progression of illness, occupation, history of drug intake, history of contact with dyes, focal sites of infection, other cutaneous and systemic disorders were evaluated. A careful general physical examination, dermatological and systemic examination were carried out and recorded in the proforma designed for the study. Dental examination was done in all patients. Complete hemogram,bleeding time, clotting time and blood glucose levels were done for all patients. Investigations like lipid profile, venous doppler, histopathological examination of lesions, thyroid profile, and detection of hepatitis B, C virus, antinuclear antibody and rheumatoid factor.

Results:

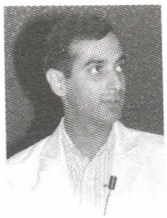
A total of 32 patients fulfilling the inclusion criteria were drawn in to the study. The majority of patients (37.5%) belonged to the 31- 40 years group. The mean age of the patients was 40.4 years. There was a preponderance of males (78.1 %) with male: female ratio of 3.5: 1. 62.5% of patients were asymptomatic. Apart from discolouration being the main complaint in all

patients, itching was next commonest symptom associated with PPD seen in 37.5 % of patients. Pain over lesion site was experienced by 3.1 % patients. The mean duration of disease before consultation is 30.2 months. A greater part presented between 1-5 years of onset of disease. 34.4% patients had history of significant drug intake, 6.3% had history of calf pain due to varicosities, 9.4% had history of vigorous exercise, 15.6% had odontogenic infections and 3.1 % had past history of jaundice. The lower limbs were mainly affected with ankles involvement in 84.4%, feet involvement in 71.9% and legs involvement in 59.4% patients. Upper limbs were involved in 6.3% and abdomen involvement was seen in in 3.1 %. The morphology of lesions studied showed macules (78.1 %), patches (18.8%) and papules (3.1 %). The colour was cayenne pepper in 96.9% patients and golden in 3.1 % of cases. Atrophy was noticed in 12.5% of cases, telengiectasia seen in 3.1 % of patients, and lichenification in 6.3% of cases. The majority of patients in the study (96.9%) presented with features suggestive of Schamberg's disease while a minority (3.1 %) presented with features suggestive of lichen aureus. 25% of the patients had diabetes mellitus with majority (21.9%) manifesting type 2 diabetes mellitus. 15.6% of patients manifested with odontogenic infections, of which 12.5% had periodontitis, and 3.1 % had caries teeth. 12.5% of patients had hyperlipidemia, 6.3% had thyroid dysfunction (hypothyroidism) and 3.1 % were diagnosed with hepatitis C infection.

Conclusion:

PPD is an infrequent skin disorder. It can involve any age group of persons with males affected predominantly. In majority of patients PPD is asymptomatic. Hence the patients usually present later in the course of the disease. Causative factors can be identified in >50% of patients with PPD. Drug intake, vigourous exercises, venous hypertension and foci of infections are the common possible causative or precipitating factors. The lower limbs, commonly the distal parts are mainly affected. Cayenne pepper macules are the commonest presenting morphology of lesions. Schamberg's disease is the predominant subtype seen. PPDs are associated with underlying disorders like DM, thyroid dysfunction, hyperlipidemia, odontogenic infections, hepatitis and connective tissue disorders (morphea etc) seen in few cases. Hence a detailed investigation of all patients with PPD is warranted.

PLATE OSTEOSYNTHESIS OF DISTAL END OF FEMUR USING DYNAMIC CONDYLAR SCREW



Dr. M. Siddarth

Department of Orthopaedics

Background:

Supracondylar fractures of femur in adults account for only 7% of all femoral fractures. The objective of this study was to evaluate the functional outcome & complications of using Dynamic Condylar Screw for fracture of distal femur.

Methods:

20 patients with supracondylar or intercondylar fractures were treated by Dynamic Condylar Screw with or without bone graft between December 2007 & May 2009. Four were open fractures.

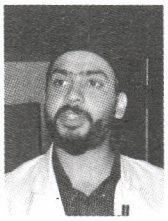
Results:

The avg. time for fracture healing was 15.6 weeks. According to Schatzker & Lambert critertia, excellent results were recorded in 8 patients(40%), good in 6 patients(30%), moderate in 3 patients(l5%), poor in 3 patients(l5%): Complications included 10 to 15° valgusin 5 patients, shortening of 1 to 2cms in 5 patients & deep infections in 3 patients.

Conclusion:

At the end of the study it was found that DCS is a good method of treating Muller's type A & type C 1 & C2 fractures. However type C3 & compound fractures treated by this method had poor results.

CONGENITAL MALFORMATIONS IN PERINATAL AUTOPSY: A PROSPECTIVE STUDY



Dr. Mandeep Singh Bindra
Department of Pathology

Objectives:

Congenital malformations are one of the leading causes of perinatal deaths and infant mortality. The objective of the present study is to detect visceral malformations in perinatal autopsies and categorize them system wise.

Design:

Details are collected regarding perinatal death from department of Obstetrics and Gynecology, at R.L. Jalappa Hospital, Kolar, during the period from June 2007 to May 2009. Postmortem studies were done on 32 cases, depending upon the availability of parents consent in perinatal deaths for doing the perinatal autopsy. Out of 32 perinatal deaths studied by autopsy, 30 were still born and only 2 were early neonatal deaths. Thus these 32 cases formed the material for this study. In each case, an attempt was made to find out the clinical cause of perinatal deaths and clinicopathlogical correlation was attempted after a detailed postmortem and histopathological study

Results:

Congenital malformations were seen in 10 cases which accounted for 31.2% of perinatal deaths. A total of 59 congenital malformations were observed in 10 cases. Malformations of the alimentary system (22.0%) was the most common followed by genitourinary system (16.9%), musculoskeletal system (13.5%) and central nervous system 00.1%).Only one case presented with respiratory and cardiovascular malformation(1.7%). In the miscellaneous group (33.8%), 2 cases of Harlequin

Icthyosis and one case each of Meckel Gruber (MG) syndrome, Sirenomelia and Twin Reverse Arterial Perfusion (TRAP) Syndrome were seen. Other malformations placed in miscellaneous groups are of skin (3), nose (7), eyes (3) and ears (2).

Conclusions:

In many of the perinatal deaths, internal malformations were not suspected clinically. Thus, autopsy is an invaluable tool for detecting visceral malformations, adding to the clinical diagnosis and counseling the parents for subsequent Pregnancies.

STUDY OF MYOCARDIAL INFARCTION IN YOUNG ADULTS

Dr. Nagaraj N.

Department of General Medicine

Background and objectives

Although there has been many studies related to myocardial infarction (MI) in aged patients, comparatively few studies are there on young patients. India contributes significantly to the global burden of cardiovascular disease. Premature coronary heart disease has been demonstrated to be three times higher in Indians when compared to subjects of similar age in Western World. This study was undertaken to evaluate the clinical presentation and the major risk factors involved in the pathogenesis of myocardial infarction in persons aged less than 45 years. Specialreference was given to risk factors like smoking, hypertension, socioeconomic status, homocysteine levels wherever needed, and echocardiographic findings after an episode of acute myocardial infarction.

Methods

Clinical profile of 50 cases admitted with acute myocardial infarction was studied. Various socio-demographic parameters like age, sex, occupation, religion, income, BMI, personal habits like smoking, alcohol intake, diet, life style and a detailed history arid clinical examination was done pertaining to various risk factors involved in myocardial infarction. The patients were investigated further according to protocol to evaluate the risk factors. The odds ratio was established initially for each of the factor to derive the unifactor analysis.

Results:

Almost all patients presented with chest pain (96%) and commonly associated symptoms were sweating followed by nausea and vomiting. Dyslipidemia was the most common risk factor, which was present in 72% of cases, followed by smoking (62%). Majority of patients belonged to middle class and were involved in moderate activity. Multi-variant logistic regression analysis showed HDL, hypertension, LDL, physical activity, and smoking to be independent risk factors for myocardial infarction in young adults. Significant number of patients recovered with good cardiac ejection fraction. In this study only two patients died and mortality was only 4%, which shows the good prognosis associated with myocardial infarction in young adults.

Interpretation and Conclusion:

Multiple risk factors were involved in the pathogenesis of MI in young adults. Myocardial infarction has a very good prognosis in the young on timely intervention and prevention is possible by reduction of modifiable risk factors.


On 4th & 5th MARCH 2010


SDUAHER
On 4th & 5th MARCH 2010