

AMIYA BIKASH CHOWDHURY

(25 November 1923 – 27 June 2006)

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Richard King



AMIYA BIKASH CHOWDHURY

(1923–2006)

Elected Fellow 1972

INTRODUCTION

AMIYA BIKASH CHOWDHURY, widely regarded as a father-figure in the field of medical parasitology in India passed away on June 27, 2006. Professor AB Chowdhury was a brilliant academician. As a biomedical scientist of eminence, he was a strong advocate of cross-disciplinary approach towards solving health problems caused by parasites. I had the proud privilege of being associated with Professor Chowdhury for the last 25 years, ever since I started my research career in Indian Council of Medical Research (ICMR). I received guidance and encouragement from him. I was nominated by him for the Fellowship of the Indian National Science Academy. I also became a family friend and saw in Professor Chowdhury not only a brilliant scientist who promoted young researchers but also a kind hearted and honest human being with great values for integrity in life. His death is a personal loss to me.

BIRTH, PARENTAGE AND EDUCATION

Born on November 25, 1923 in a remote village near Chittagong of undivided Bengal, Amiya Bikash Chowdhury was the eldest son of Sri Subal Chandra Chowdhury and Smt Promoda Bala Chowdhury. It was the grit and determination of his mother, a pious, simple, intelligent and disciplined lady with little formal education, which greatly influenced the shaping of his early life against many odds. Her inspiration also helped in the development of his strength of character and positive attitude towards life.

Professor Chowdhury had his primary education in a village school and then went to study in Chittagong Government High School during the last two years of his schooling. He passed his Matriculation examination in first division with letters of distinction in 1940 from Calcutta University. After securing Inter Science degree in first division with distinction in 1942 from Calcutta University, he studied medicine in Calcutta Medical College and obtained his MBBS degree in 1947 with merit scholarship. After this, the partition of Bengal as well as the illness of his father forced Dr Chowdhury to take up assignment as an Intern, a Resident Medical Officer, Registrar in the Department of Medicine in Calcutta Medical College, Assistant Research Officer of the ICMR and Darbhanga Research Scholar at the



Calcutta School of Tropical Medicine. In 1954 he joined Calcutta School of Tropical Medicine as a Lecturer in the Department of Helminthology. It was his keen interest in scientific work, which made him pursue his research after the routine laboratory work during office hours and earn his Ph D in Medicine from Calcutta University in 1956. He was awarded the Rockefeller Foundation Fellowship for post-doctoral work at Cornell University Medical College, USA in 1957.

PROFESSIONAL CAREER AND POSITIONS HELD

Professor Chowdhury started his service life as a Lecturer in the Department of Helminthology, Calcutta School of Tropical Medicine in 1954 and was elevated to the post of Professor and Head in 1959. He was also Professor and Chairman, Department of Parasitology and was In-charge of the Field-Epidemiology Unit of the Calcutta School of Tropical Medicine from 1964 to 1981. He was associated as Senior Physician and Superintendent with the Carmichael Hospital for Tropical Diseases from 1972 to 1981. Professor Chowdhury became the Director of the Calcutta School of Tropical Medicine in 1972 and served in this position till his retirement in 1981. He held various important national and international positions during his service period and even after his superannuation.

Other Positions Held

- Visiting Lecturer, Cornell University Medical College, USA, 1957-58
- Principal Coordinator, Collaborative Research Programme with John Hopkins University, Baltimore, USA, 1961-70
- Exchange Scientist, National Academy of Medical Sciences, 1971-72
- Visiting Professor, Post Graduate Institute of Medical Education and Research, Chandigarh, 1972
- Vice Chairman, Centre for Study of Man and Environment, Kolkata, 1974-83
- Member, United Nations Environment Programme Expert Team on Schistosomiasis, People's Republic of China, 1975
- Visiting Professor, Pennsylvania University, USA, 1976
- Member, Expert Advisory Panel (Parasitic Diseases), WHO, 1977
- Member, Steering Committee, WHO, 1978
- Advisor-Consultant, National Disease Control Project, Philippines, 1980-81
- Advisor-Consultant for Tropical Diseases, GDR, 1980
- Member, Scientific Working Group on Parasite-Related Diarrhoeas, WHO, Geneva, 1980



- Consultant, WHO, 1982
- Chairman, Centre for Study of Man and Environment, Kolkata, 1983-2006
- Emeritus Scientist, ICMR, 1983-87
- Emeritus Professor, Calcutta School of Tropical Medicine, 1987-1990
- President, Vivekananda Institute of Medical Sciences, 1995-2006

HONOURS, AWARDS, NATIONAL AND INTERNATIONAL ACADEMIC RECOGNITION

- Coates Medal for outstanding contribution to Medical Science during the preceding seven years, Calcutta University, 1964
- Goswami Memorial Medal, Indian Medical Association, 1971
- Warner Oration and Gold Medal, Indian Association of Gastroenterology, 1974
- Laschimpat Oration, National Academy of Medical Sciences, 1974
- Sir Nil Ratan Sarkar Memorial Oration and Gold Medal, 1975
- Col Calvert Memorial Oration and Gold Medal, Indian Medical Association, 1976
- Khantimani Nagendrabala Oration, Calcutta University, 1977
- Tapan Memorial Oration and Gold Medal, Indian Medical Association, 1978
- Guest Oration, Fifth Regional Conference of Indian Pharmacological Society, Pondicherry, 1978
- Dr Santilal Seth Oration, Annual Conference of Indian Academy of Paediatrics, 1979
- Major General Sahib Singh Sokey Oration, Haffkine Institute, Bombay, 1979
- Key-note Address, Third National Congress of Parasitology, 1980
- Basanta Oration, Calcutta University, 1981
- JB Chatterjee Memorial Oration and Gold Medal, JB Chatterjee Memorial Committee, 1995
- Indian Independence Golden Jubilee Award for Life Time Achievement in Parasitology, World Parasitology Meet at Hyderabad to celebrate centenary of malaria parasite discovery, 1997
- Barclay Memorial Award, Asiatic Society, 1998



Academic Recognition***Fellow of***

- Indian National Science Academy (FNA)
- National Academy of Medical Sciences (FAMS)
- Royal Society of Tropical Medicine and Hygiene, UK (FRSTM&H)
- Indian Society for Parasitology
- State Medical Faculty, West Bengal
- West Bengal Academy of Science and Technology (WBAS&T)

Conferences/Symposium Attended

- President, First National Congress of Parasitology
- President, Indian Science Congress, Section of Medical and Veterinary Sciences, 1966-67
- Chairman, Seminar on Soil-Transmitted Helminths, New Delhi, 1971
- Sectional Chairman, Drug Design Symposium, Lucknow, 1976
- Chairman, Plenary Session on Tropical Diseases, Annual Conference of the Association of Physicians of India, 1977
- Chairman, Symposium on Malaria, Eighth Annual Conference on Communicable Diseases, 1978
- Chairman, Symposium on Malaria, Annual Conference of Indian Academy of Paediatrics, 1979
- International Conference on Communicable Diseases, USSR, 1961
- World Health Organisation Seminar on Filariasis, Manila, 1965
- Eleventh Pacific Science Congress, Tokyo, 1966
- Second and Third Conferences on Parasitic Diseases, Bangkok, 1966 & 1967
- First South-East Asian Seminar on Tropical Medicine, Bangkok, 1967
- Eighth International Conference on Tropical Medicine and Malaria, Tehran, 1968
- World Health Organisation Seminar on Medical Education and Healthcare in Tropics, Colombo, 1970
- South-East Asian Conference on Chemotherapy of Tropical Diseases, Bangkok, 1971



- Key-note Address, Fourth Seminar on Tropical Medicine, Seoul, 1973
- Sectional Chairman, Third International Congress on Parasitology, Munich, 1974
- Sectional Chairman, International Seminar on Helminthic Diseases, Bombay, 1974
- Special Invitee, First Joint Conference of American Society of Tropical Medicine and Hygiene & Royal Society of Tropical Medicine and Hygiene, Philadelphia, 1976
- Sectional Chairman and Chairman of the Plenary Session, Fourth International Congress on Parasitology, Warsaw, 1978
- Key-note Address, WHO Seminar on Immunology of Parasitic Diseases, 1979
- International Symposium on Health Policy in Developing Countries, Belgium, 1979
- Sectional Chairman, Eighth Seminar on Tropical Medicine, Seoul, 1981
- Association with Learned Scientific Bodies, Academies and Societies
- President, Indian Society of Parasitology
- Vice President, World Federation of Parasitologists
- Chairman, Committee on Schistosomiasis, DST, Government of India
- Chairman, Scientific Advisory Committee, Rajendra Memorial Research Institute, Patna
- General Secretary, Indian Association of Parasitology
- Councillor, Indian Association of Parasitologists
- Vice President, Helminthological Society of Parasitologists
- Member, Council, Indian National Science Academy
- Member, Council, National Academy of Medical Sciences
- Member, Scientific Advisory Committee for S S Bhatnagar Award
- Member, Armed Forces Medical Research Committee, Ministry of Defence, Government of India
- Member, National Committee on Animal Health, Ministry of Agriculture and Irrigation, Government of India
- Member, Governing Body and Scientific Advisory Board, ICMR
- Member, Scientific Advisory Board, Haffkine Institute, Bombay



- Member, Research Council, Central Drug Research Institute, Lucknow
- Member, Council and Governing Body, Indian Statistical Institute, Kolkata
- Member, Scientific Advisory Committee, Cholera Research Centre, Kolkata
- Member, Scientific Advisory Committee, Tuberculosis Research Centre, Madras
- Member, Scientific Advisory Committee, All India Institute of Hygiene and Public Health, Kolkata

Member, Editorial Board

- Indian Journal of Parasitology,
- Acta Tropica, Switzerland,
- Indian Journal of Medical Research, New Delhi
- Journal of Indian Medical Association, Kolkata
- Journal of Indian Association for Communicable Diseases, New Delhi
- Indian Journal of Malariology, New Delhi

SCIENTIFIC CONTRIBUTIONS

Professor Chowdhury was a biomedical research scientist of established repute, specializing in the field of tropical medicine, medical parasitology, immunology, epidemiology and environmental medicine. Many of his research contributions were of outstanding merit that earned him international acclaim. Indeed, he contributed substantially to raise the standard of research on parasitic diseases in India. His research-yield bears the mark of a combination of fundamental and applied studies, ranging widely from bedside clinical research and field studies on the one hand to the use of electron microscope, radioisotopes and immunoassays on the other.

Research studies on medical parasitology in early days were characterized by a dichotomous and disjointed approach. Classical parasitologists, mostly zoologists, were primarily interested in morphology, taxonomy, life cycle and host range of parasites, while the medical men were concerned mainly with the clinical expression of the diseases produced by parasites and information about the drugs for their treatment. Professor Chowdhury had always been a strong advocate of cross-disciplinary approach with meaningful blending of multiple disciplines, specially favouring enrichment by relevant expertise from basic sciences, to solve the health problems caused by pathogenic parasites. He also emphasized the imperative need for a comprehension about the total dimension of the problem to be studied, rather than a segmental view to ensure the desired outcome.



Structure-function Relationship of Parasites

He made pioneering studies to determine the microchemical composition of human parasites with the application of histochemical methods and disclosed functional responsibilities of the ultrastructural components of many parasites with the help of electron microscopy. These observations were recognized to be of great help in the understanding of biochemical and physiological activities of the parasites including their disease-producing potential. This also contributed towards clarification of some aspects of the mode of drug action against some parasites and enlarged the scope for improvement in the strategy of chemotherapy.

Host-parasite Relationship including Immune Reactions

His studies in different facets of host-parasite relationship, specially the way quality and quantity of host reactions, including immune reactions, are determined and their geographic variations, led to a clearer elucidation of parasitic pathogenicity. He applied new immuno-diagnostic techniques with advantage for epidemiological studies of parasitic diseases, particularly for mass diagnostic screening of population at risk, measuring degree of transmission and making a critical assessment of prognosis in individual cases. His observations indicated for the first time the superiority of antigens from homologous sources and the limitations of heterologous antigens for the immuno-diagnosis of parasitic diseases. He and his group provided much needed information on the nature and extent of immune response in visceral leishmaniasis, their evolution, modulation and relationship with the severity of clinical condition and drug-induced clinical response. Impairment of cell-mediated immune response with concomitant enhancement of Ab-mediated immune responses during active stage of the disease and reversal of this relationship following cure, could be used to measure the severity of prognosis of the disease and also drug efficacy. However, suspicion became increasingly strong in later years that visceral leishmaniasis reflects a dysfunctional rather than a deficient cell-mediated immune response.

His studies on immunology of filariasis provided evidence for the first time suggesting direct involvement of eosinophils in the associated immune reactions. Distinct and characteristic variations of immune responses were noted in different clinical states of filariasis, specially depending on the state of microfilariaemia.

Pathophysiology of gastro-intestinal tract in parasitic infections has been extensively investigated. The disturbance in the absorptive process of nutrients across the gut wall, suggested before by animal experiments and epidemiological observations, was demonstrated clearly with the help of controlled studies on human subjects. It was also observed that upper intestinal helminthic infections can produce a condition closely simulating peptic ulcer syndrome. However, parasite-



induced morbidities of gastro-intestinal tract were largely reversible following removal of parasites.

Occult Parasitosis

Professor Chowdhury was one of the earliest few to suggest filarial aetiology of tropical pulmonary eosinophilia. Besides, he drew pointed attention to the danger of human infection by host-foreign parasites, which unable to develop into adult stage in the abnormal host, are sequestered in immature forms in ectopic locations involving different organs and providing great diagnostic difficulties. Along with his students, he demonstrated for the first time the presence of *Angiostrongylus cantonensis* in India, causing eosinophilic meningo-encephalitis. This was in conformity with the mode of causation of visceral larva migrans, cercarial dermatitis, etc. by other parasites.

Zoonosis

Apart from occult parasitosis, Professor Chowdhury and his colleagues investigated problems of parasitic zoonosis as a grave public health hazard. Trichinosis, a disease ending fatally at times, is caused by *Trichinella spiralis*, and is readily transmissible to man from animals in many parts of the world. The apparent absence of this disease in human population in India remained in enigma, until their group with the help of carefully designed epidemiological and experimental studies established that lack of adaptation of the parasite to the locally prevalent mammalian host range, was the determining factor, and this poor adaptability could be manipulated with the change of host or with rapid and increased number of passages in the same experimental host. Their study also provided valuable information about another important zoonotic disease, hydatidosis, specially with respect to its immunodiagnosis and chemotherapy.

Biology of Parasites and their Vectors

His studies on the biology of parasites, their growth-requirements, response to the physico-chemical composition of the environment, and factors influencing the efficiency of transmitting vectors are of considerable importance in the understanding of the transmission dynamics of parasitic diseases. He had recorded valuable observations on the effects of X-ray irradiation on the developing parasites and his pioneering studies on tagging the parasites with radioactive isotope opened up a new vista for exploring the unsolved problems of parasitic diseases.

Parasitic Infections in Rural Areas

Professor Chowdhury and his colleagues quantified the magnitude of public health problems due to parasitic infections in rural West Bengal, for the first time with the



help of a statistically appropriate population sampling procedure, which was particularly acclaimed. Their investigations led to the conclusion, not known before, that *Ancylostoma duodenale*, but not *Necator americanus*, in larval stage enters into a phase of arrested development inside the human host as an adaptation to a seasonally unfavourable external environment. This was strongly supported by their studies on the population biology of hookworms in the children of the same rural area. A longitudinal epidemiological investigation produced convincing evidence for pronounced seasonal variation in adult hookworm load in the population, resulting from an annually occurring propensity for arrested development of *A duodenale*, attributable to confinement of rainfall to a few months of the year only. They recorded for the first time the presence of hypobiotic hookworms in man with suspension and resumption of development in response to the suitability of external environment. These observations radically revolutionised the epidemiological framework of hookworm infection and called for appropriate changes in the chemotherapy-based control strategy. What is more, a composite view of different facets of this large-scale investigation, showing species-specific arrested development, seasonal variation of work burden, probable variation in predisposition to heavy or light infection, along with some immunological parameters was of great help to understand the regulatory mechanism of the natural abundance of hookworms in a given community at a particular point of time.

Clinical Trial of Drugs

Professor Chowdhury was one of the few who carried out extensive and scientifically designed clinical trials with a large number of antiparasitic drugs on patients in the hospital and also on those under field conditions. These studies led to a proper evaluation of their efficacy and formulation of the most optimum dosage schedule. He was invited to author the section on the parasitic diseases in a number of books dealing with treatment of diseases.

Health and Environment

In recent years he was interested in the quality of environment and its role in the prevalence of parasitic and other tropical diseases. His endeavour and contribution in the field of environmental manipulation for control of parasitic diseases, particularly schistosomiasis, took him to Peoples Republic of China as an expert of the United Nations Environment Programme. He also visited Philippines, on invitation, for an assessment of relationship between methods of irrigation and distribution of schistosomiasis. He also contributed to the foundation of the Centre for Study of Man and Environment, Kolkata and was associated with it till his death.

These works explained the mode of drug action in some parasitic diseases and their functional significance. Studies in population biology and transmission



dynamics of parasitic infections, identified factors regulating natural abundance of parasitic pathogens, arrested the development of human hookworms through adaptation to unfavourable external environment. He made a significant contribution to the development of Medical Parasitology as a distinct discipline in India, facilitating specialized training of personnel to be utilized in the National Control Programmes against Parasitic Diseases.

In his death the scientific world has lost one of the most distinguished parasitologists. A man of amicable personality, he was not only a distinguished teacher and researcher, but was a good human being. Those who came in contact with him knew his remarkable ability as an orator. He always encouraged young scientists to excel in research. He was friend, philosopher and guide to many young researchers.

GENERAL QUALITIES

As a teacher he was brilliant. All his students admired him as an orator who had an excellent command on English language. His lectures always provided the latest information on the subject.

As an Organiser and Administrator

Under Professor Chowdhury's able stewardship as the Director, School of Tropical Medicine, Kolkata as well as the Superintendent, Carmichael Hospital for Tropical Diseases during 1972 to 1981, the School and the Hospital saw one of their most glorious periods. As a gifted Administrator, he expertly blended his people-orientation with his task-orientation to bring the best out of every team he led. His natural leadership endeared him to his colleagues everywhere. With exemplary organizing abilities he helped the cause of nation building in his field of work and often outside it. He was a Founder Member of the Centre for Man and Environment in Kolkata and helped in a big way setting up of the first Nursing College in Kolkata.

Extra-curricular Activities

The active political interest of his student life before the independence of India found expression in his continuing concern for the poor and the diseased in any part of the world. He was an exceptional debater. He often privately shared that it was his genuine interest in logical arguments for which he wanted, as a small child, to become a Barrister-at-Law, before he took up the study of medicine in fulfillment of the wish of his parents.

Hobbies and Interests

Professor Chowdhury was a voracious reader throughout his life. He had a bend of mind for literature. He was fond of classical Indian music and dance. During his



school days, he enjoyed playing football. He loved to watch cricket and tennis. He had a very large circle of close friends in India and abroad. He had never practiced as a doctor, but often provided free medical advice to patients from all walks of life.

Attitude towards Life

Professor Chowdhury believed in the dictum, 'Sukheshu bigataspriha, dukheshu anudbighnamana.' He never compromised with his values and principles. He bore a positive attitude towards life even in most trying times.

Family

Professor Chowdhury wedded Dr Momota Chowdhury in 1950. They were classmates at the Calcutta Medical College and knew each other closely since 1943. Dr (Mrs) Chowdhury received her post-graduation qualification in Paediatrics from UK and obtained post-graduation training in USA. After coming back to India, she served in various hospitals including the Institute of Child Health, Kolkata and retired as the Professor and the Head of the Paediatrics Department, Ramakrishna Mission Seva Pratisthan, Kolkata. She was the President, West Bengal Branch of the Indian Academy of Paediatrics. She was pioneer in the promotion of breast-feeding in Kolkata and a National Trainer in the Breast-Feeding Network of India. Professor Chowdhury and Dr (Mrs) Chowdhury provided valuable support to each other in pursuing their respective careers and in taking care of the family. Professor Chowdhury's daughter Tuli is a Ph D in Physiology. She is a Scientist in the Indian Institute of Chemical Biology, Kolkata. His son Rahul did his graduation in Economics. He is an Officer in the Bank of India.

MEMORIES OF CLOSE ASSOCIATES OF PROFESSOR AB CHOWDHURY

Amongst the close associates of Professor Chowdhury were eminent scientists like Late Professor RN Chopra, Late Professor JB Chatterjee, Professor JK Sarkar, Professor RC Mahajan, Professor NK Ganguly, Professor BB Chatterjee, Professor Manish Chakrabarty and Late Professor PG Chutani. I could interview Professor Mahajan, Professor Ganguly, Professor Chakrabarty and Professor Sarkar and all of them shared with me their valuable memories of Professor Chowdhury.

Professor RC Mahajan, Former Professor and Head, Department of Parasitology, PGI, Chandigarh, was closely associated with Professor AB Chowdhury and he considers that Professor Chowdhury was actually his mentor. He recalls the efforts of Professor Chowdhury to initiate the MD (Tropical Medicine) course at the School of Tropical Medicine. Professor Mahajan also acknowledges the spontaneous support and guidance he received from Professor Chowdhury. He



believes that Professor Chowdhury gave a new dimension to the study of tropical diseases in India and was a kind hearted and affectionate person.

Professor NK Ganguly, Director General, Indian Council of Medical Research, New Delhi, gratefully acknowledges his close association with Professor Chowdhury and the support and guidance he received from him. He sincerely believes that Professor Chowdhury was one who helped him tremendously in shaping his career.

Professor Manish Chakrabarty, former Director, School of Tropical Medicine, Kolkata recollects his close association with Professor Chowdhury from the time he joined the School of Tropical Medicine, Kolkata. He also remembers Professor Chowdhury's command over English language and the way he conducted monthly seminars in STM.

Professor JK Sarkar, former Professor of Virology at the School of Tropical Medicine, Kolkata remembers Professor AB Chowdhury as an extremely intelligent person who was a very good speaker. Professor Chowdhury was a heavy smoker and so Professor Sarkar advised him repeatedly to quit smoking. He also remembers how much he enjoyed Professor Chowdhury's company when they used to go to many places together.

ACKNOWLEDGEMENT

I express my deep sense of gratitude to Dr (Mrs) Momota Chowdhury for her discussion with me on various occasions about Professor AB Chowdhury, which was of great help in preparing this profile. My sincere thanks are due to Tuli and Amit Biswas, Professor Chowdhury's daughter and son-in-law, who provided support to me in every possible way in preparing and giving final shape to this biographical memoir.

SK BHATTACHARYA, FNA

Additional Director General

Indian Council of Medical Research

Ansari Nagar, New Delhi-110029

E-mail: sujitkbhattacharya@rediffmail.com

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