

## Reminiscences

In the following pages, you will find recollections, thoughts and suggestions from senior members of the Indian Society of Gastroenterology.

When we conceived this idea for this Anniversary supplement issue, the intention was to allow our senior members to express themselves freely, without the restrictions of a formal scientific publication. We invited them to write on any subject they felt passionate about, and set no rules.

We sent out invitations to members who nurtured the Society through its formative years, and saw the growth of the specialty in the country. Most responded graciously despite demands on their time and other pressures. Some did not respond, and some others agreed but could not deliver. We will miss these contributions in what we thought would be a historic record of their wise words.

We hope you enjoy reading these pages as much as we feel privileged to publish them. The articles are arranged in alphabetical order of the authors' names.

Philip Abraham

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### Gastroenterology in India – a retrospect

V Balakrishnan

Kochi

Gastroenterology in India started developing as a specialty in the sixties. The Indian Society of Gastroenterology (ISG) was formed in 1960 with Maj.Gen.Amir Chand as the Founder-President and Dr. H K Chuttani as the Founder-Secretary. This was just two years after the foundation of OMGE, the World Gastroenterology Organization, on May 29, 1958, the last day of the first World Congress of Gastroenterology at Washington, DC. The ISG was accepted as a founder-member of the world body. The formation of the ISG gave a platform for Indian physicians and surgeons and other specialists interested in gastroenterology practice, teaching and research to meet and share their ideas and work. Under the able leadership of its early office-bearers, such as Drs. P Raghavan, Col. Sangamlal, P N Chuttani, N Gadekar and F P Antia, the nascent society scaled great heights within a short period.

The first Indian gastroenterologists were either self-trained or trained in the UK or the USA. Many of them, such as Drs. P N Chuttani and H K Chuttani at Amritsar, Antia and Raghavan in Bombay, S J Baker in Vellore, R P Malhotra from the Railways, and A K Basu in Calcutta, were already engaged in research in gastrointestinal problems of great topical interest. The areas they were working on were amebiasis (which was rampant during those days), peptic ulceration, portal hypertension, intestinal parasites, and tropical diarrheas, to name a few.

The starting of two academic departments of

gastroenterology, at the All India Institute of Medical Sciences (AIIMS) in New Delhi and the Postgraduate Institute of Medical Education and Research (PGIMER) at Chandigarh, gave a fillip to gastroenterology teaching and research in India. I, along with Dr C M Habibullah, had the fortune to be selected to the first DM course in Gastroenterology at the PGIMER in 1970. We shared with our mentors the excitement of setting up one of the first academic gastroenterology departments in India. I recall the high anticipation surrounding the first upper gastrointestinal endoscopy we performed under the supervision of late Dr. A K Sehgal using a newly imported Machida fore-oblique upper GI scope. Before this new scope arrived, we had our initiation to rigid esophagoscopy and gastroscopy at the PGIMER. We were constantly under pressure to set standards for one of India's first superspecialty training programs, and we were seized with passion and thrill at being in the center of the breathtaking breakthroughs of a speciality that was growing in leaps and bounds.

Diseases change fashion, and the most talked about diseases those days were amebiasis, tropical sprue, non-cirrhotic portal hypertension, peptic ulcer and the newly emerging (in India) ulcerative colitis. Irritable bowel syndrome was a common diagnosis. Among our teachers, Dr. S K Mehta was an authority on malabsorption, and Dr. D V Datta, who had a premature death later, was our last word in liver diseases. He had the additional sheen of having been Sheila Sherlock's PhD scholar. In his short but active life he dazzled as a research worker, with publications in non-cirrhotic portal fibrosis, hepatic hemodynamic studies, arsenic toxicity of the liver, and Budd-Chiari syndrome.

Meanwhile, at the AIIMS, an equally vigorous

DM program was on the go, and pathbreaking research was being done under the leadership of Dr. B N Tandon, who subsequently made his mark in several areas of gastroenterology. The PGIMER and the AIIMS spearheaded the growth of gastroenterology as a speciality in India.

Around this time, Dr. Baker at Vellore, who was initially investigating into megaloblastic anemias, got fascinated by the large occurrence of tropical sprue and started studying endemic and epidemic tropical sprue in and around Vellore. In this work, he was soon joined by his student and confidante, Dr. V I Mathan. Their work stimulated many workers in northern India to study tropical sprue, particularly Dr. S K Mehta and his wife and pediatric gastroenterologist, Dr. Saroj Mehta, who delved into malabsorption in northern Indian children. The Wellcome Trust Tropical Sprue Research Unit under Dr. Baker, ably assisted by Dr. Mathan, later expanded into a full-fledged gastroenterology department. Dr. Mathan proved to be a brilliant researcher who, through his several publications in the field of malabsorption, established an international reputation. Tropical pancreatitis was described from Kerala by Dr. Geevarghese in the early sixties and this attracted world-wide attention.

The GE department at Vellore, along with the GE department at Madras Medical College, headed by Dr. N Madanagopalan, started a DM training program, perhaps the South's first. Bombay also had a very active GE group manned by Drs. Antia, Raghavan, B D Pimparkar, B J Vakil, H G Desai, Sharad Shah and R A Bhalerao, working at the Bombay Hospital, K E M Hospital, J J Hospital and Nair Hospital. They were all great clinicians, teachers and research workers who made notable contributions to Indian gastroenterology.

Around this period two new academic centers in gastroenterology came up in the South –at Osmania Medical College, Hyderabad under the leadership of Dr. Habibullah and at Trivandrum Medical College under my headship. Both these departments pioneered the growth of gastroenterology in southern India. DM training was started in these departments by the year 1980. The starting of a GE department at Varanasi by Dr. J P Gupta, who was later joined by Dr. A K Jain, was another landmark.

Parallel with these advances in teaching and research, endoscopy was fast establishing itself as a diagnostic and therapeutic tool in many centers.

By the early seventies, diagnostic endoscopy was available in several departments, and by the eighties ERCP and therapeutic endoscopy became very popular, the PGIMER and AIIMS playing leading roles in promoting these. In course of time, many new GI centers came up in the private sector, and gastroenterology graduated from a rare and exotic speciality to one of the major medical subspecialties in India. Endoscopy changed the face of gastroenterology practice, something one had never imagined. Suddenly, gastroenterology became a procedure-oriented speciality and this attracted many youngsters into its fold. A large number of bright young men and women got fascinated by this new, exciting diagnostic and therapeutic modality that requires great physical skills and mental co-ordination to perform. Many young gastroenterologists went abroad, got trained and came back to man new endoscopy units, and in another few years India caught up with the West in its proficiency in advanced endoscopy. In cities like Mumbai, Hyderabad, Chennai and Cochin, pioneering work was being done in GI endoscopy in units in the private sector. There were sophistications that came to be introduced, such as videoendoscopy in place of fiberoptics, and Indian gastroenterologists kept abreast with these developments.

Another great impetus to the practice of gastroenterology was provided by newer imaging modalities, initially ultrasonography and subsequently, CT scan. These diagnostic tools made biopsies and laparotomies redundant in many instances. CT scan, and later MRI, became popular and available even in small towns, contributing to accuracy in GI diagnosis. Capsule endoscopy and GI manometry are yet to catch up in routine GI practice. Endoscopic ultrasonography is available in a few centers and is yet to gain wide application.

Molecular biology and genetics, though a little late to be taken up, got a boost with the arrival of our knowledge about hepatitis viruses and later *Helicobacter pylori*. Tests for viral markers of hepatitis became easily available, even though universal screening of donor blood is still not routinely practiced in our country, reflecting lack of political will. Genetic studies are still confined to a few national centers such as the Center for Cellular and Molecular Biology, Hyderabad, the AIIMS and PGIMER.

The eighties saw the rise of a new academic center in northern India, the Sanjay Gandhi

Postgraduate Institute of Medical Sciences (SGPGI) in Lucknow. The GE department was nurtured by a dynamic personality, Dr. S R Naik, who was an excellent teacher and researcher. Several research papers came out of this institute, notably in viral hepatitis. After his untimely death, the mantle was passed on to another outstanding teacher, Dr. Gourdas Choudhuri. Major departments of gastroenterology soon were established in several cities, offering first-rate services.

The ISG was at the forefront of this revolution in gastroenterology practice, teaching and research in India. People with dynamism and vision guided this society. The scientific meetings of the ISG were of a high order and the quality of papers was steadily improving. At the Goa annual meeting of the ISG in 1972, a group of workers including Drs. Antia and Datta, proposed the starting of an Indian Liver Study Group. Despite strong opposition from a conservative section within the ISG, the liver group was formed within a year. The name of the group was later changed to the Indian Association for Study of the Liver (INASL). The track record of this society over the past few years has proved the wisdom and far-sightedness in starting this society. The INASL has played a major role in elevating hepatology in India to its rightful place today. The story was similar in the case of the Society of Gastrointestinal Endoscopy of India (SGEI), which was the brain-child of Dr. Vakil. Again, as in the case of hepatology, the SGEI played a crucial role in developing this branch of gastroenterology in India over the past few years. I had the privilege of being a founder-member of both these societies. The growth of hepatology and therapeutic endoscopy in world gastroenterology during the past few years has vindicated the formation of these two Indian societies. Very active departments of hepatology have been functioning at the AIIMS under Dr. S K Acharya, at G B Pant Hospital under Dr. S K Sarin, and at PGIMER under Dr. Y K Chawla.

Another branch of gastroenterology that needs further strengthening is pediatric gastroenterology. Even though a pediatric GE unit has been functioning at the PGIMER for more than two decades, and two units at the SGPGI and at the Institute of Child Health, Chennai have been imparting pediatric gastroenterology training during the past few years, this subspecialty has lagged behind in its growth.

Side by side with the growth in the medical

aspects of gastroenterology, surgical gastroenterology has also taken rapid strides. A department of surgical gastroenterology started functioning in the Madras Medical College from the early sixties under Dr. K Rangabashyam. A full-fledged department of surgical gastroenterology was commissioned at the Medical College, Trivandrum, which was headed by Dr. N Rajan, who was my surgical colleague. These departments were approved for the MCh training program. Even before surgical gastroenterology assumed the status of a subspecialty, eminent surgeons proved their mettle in GI surgery in India and they were the forerunners of the subsequent breed of GI surgeons. These well-known names include Drs. S S Anand, Col. Sangamlal, Sommerville, Atam Prakash, C P V Menon, A K Basu, T E Udawadia and other men of their ilk. The pioneering centers in GI surgery were soon to be followed by other centers at AIIMS, PGIMER and SGPGI, where sophisticated surgical procedures such as hepatopancreatobiliary, colonic, esophageal and gastric surgeries were undertaken. Even though a little slower to follow, laparoscopic surgery has also gained momentum over the past decade or so, and now is done in most major centers. A few centers in India, notably at Delhi, Lucknow, Chennai, Vellore, Hyderabad and Cochin, have performed successful liver transplantations, both cadaveric and living-donor. However, this surgery, because of problems in organ donation and financial constraints, is yet to take off in a big way in India.

Gastroenterology training in India has two streams – the DM and the Diplomate of the National Board (DNB) programs. Academic institutes, including all the medical colleges, generally offer the DM program, whereas many centers with no medical college are also recognized by the National Board of Examinations to conduct the DNB program. Candidates generally prefer the DM program, firstly because of a pseudo-prestige attached to it, being a degree, and secondly because of the track record of higher chances of success in the final examination. The standards of training and examinations vary from center to center and there is tremendous scope for improvement in the training and evaluations in some of the centers. A country-wise standardization of training and evaluation is urgently called for.

There is yet no standardized endoscopy training program in India. Even though there has been a

mushrooming of endoscopy workshops, organized and structured programs that offer hands-on training under proper supervision, and stipulation of a minimum number of procedures independently performed before certification of competency, are still lacking. The easy availability of endoscopes and the commercial potential of endoscopy services entice even less-than-optimally-qualified physicians to set up endoscopy services. Uniformity of training and proper certification are yet to come, despite the efforts of the SGEI to establish such norms. Therapeutic endoscopy should ideally be confined to select centers and done by gastroenterologists who have received specialized training in it.

One of the notable achievements of the ISG was launching its own journal, the *Indian Journal of Gastroenterology*, in 1982. Dr. Vakil was the first editor, to be followed after a short while by Dr. Antia who, with his vision and hard work, earned the journal a respectable place among medical periodicals. Through the tireless efforts and dynamism of Dr. Antia's successor, Dr. Naik, the journal has come to be indexed by *Medline* and *Excerpta Medica*. The current editor of the journal, Dr. Philip Abraham from Mumbai has, through his perseverance and sharp editorial prowess, taken the journal to international standards. The *Journal* has stimulated several Indian research workers to publish the results of their studies and thus has been able to encourage them to further their research. A second journal in gastroenterology, *Tropical Gastroenterology*, published from New Delhi, offered an additional forum for Indian gastroenterologists to publish their work.

Indian gastroenterologists have also made substantial contributions to world gastroenterology literature. Studies on amebiasis from Madanagopalan's, Habibullah's and Dr. M P Sharma's groups; gastric physiology, peptic ulceration and *H. pylori* studies from Desai and colleagues; malabsorption studies from Baker and Mathan at Vellore, and the PGIMER; gallstone disease from Dr. R K Tandon; hepatitis and other liver diseases from Dr. B N Tandon, Naik, Dr. Rakesh Aggarwal, Sarin, Acharya and Dr. Deepak Amarapurkar; biliary ascariasis from Dr. M S Khuroo; endoscopic series from Dr. D N Reddy; the classic papers on the Delhi hepatitis E epidemic and on non-cirrhotic portal fibrosis from AIIMS and from Dr. Basu; Datta's work on arsenicosis; the report on tropical pancreatitis by Geevarghese, are all great contributions to literature that quickly

come to my mind. There are several others; omission does not reflect their lesser importance. Our own group, first working at the Medical College, Trivandrum and now at the Amrita Institute of Medical Sciences, Cochin, has made substantial contributions to literature on pancreatitis. This includes two books on chronic pancreatitis, published in 1987 and in 2006. The Indian Pancreatitis Study Group is now conducting a national collaborative study on chronic pancreatitis involving more than thirty centers in India and using a unique online registry for data entry.

In our quest to deliver class gastroenterology service, teaching and research, we have had the able support of several stalwarts in allied disciplines such as pathology, parasitology, immunology and radiology. Names like Drs. V Ramalingaswamy, B K Aikat, N C Nayak, Sreeramachari, Gadekar and Gajaraj stand out for their contributions to pathology, radiology and other disciplines. Without their support Indian gastroenterology could not have made the progress it has.

Indian gastroenterology has kept pace with international gastroenterology. We have learnt rapidly from the West and have made our own original contributions. Ours has been momentous times, the best time to be a gastroenterologist. How many exciting events have we been witness and partners to! The discovery of the hepatitis viruses and vaccines, the new knowledge on peptic ulcer and *H. pylori*, the fantastic world of GI endoscopy, oral rehydration solution, laparoscopic surgery, liver transplantation, the gene revolution, monoclonal antibodies, evidence-based medicine, computers and IT – there has never been a dull moment in a gastroenterologist's life during the past fifty years. How I wish to be born a gastroenterologist again!

Looking at the gastroenterology scenario today, it is my feeling that we are capable of delivering world-class patient care. However, it is a matter of concern that almost all gastroenterology services are crowded around cities and large towns, neglecting small towns and villages. Our teaching and training programs have to be better organized, structured, practical, and result-oriented, and should have uniform standards. Our research output is something to be proud of; yet, it has to travel a long way to reach world standards. We need to focus more on basic research and original studies. The silver lining is that we have a large contingent of young, dynamic gastroenterologists in our

country, who are full of energy, ideas and enthusiasm, who could take up the challenge of the future.

### **Indian Society of Gastroenterology: reminiscences of the days gone by**

**H K Chuttani**

Delhi

**I**t was the winter of 1960. In the third week of January, the All India Institute of Medical Sciences (AIIMS), New Delhi, was only 4 years old, and was hosting its first medical conference at national level – the Joint Annual Conference of the Association of Physicians of India (API). During this meeting the late Dr. P N Chhuttani, who was one of the activists of the API, came up with the idea that there should be a separate society of gastroenterology in India. Some felt that this would weaken the parent organization, the API. However, a group of physicians with interest in gastroenterology signed a document for registration of the Indian Society of Gastroenterology (ISG). Its Constitution was adopted along the lines of that of the API. I was asked to be its Hon. General Secretary and Gen. Amir Chand its first President. I submitted an application to the Registrar of Societies; registration was received in March 1960.

Soon came news that the internationally famed gastroenterologists, Dr. Henry L Bockus and Dr. Clifford J Barborka, would be visiting India from USA. Dr Bockus' book was the standard textbook in gastroenterology. The first scientific meeting under the aegis of the newly founded ISG was held March 22 and 23, 1960 at the AIIMS, attended by these two eminent gastroenterologists as well. Three symposia were organized, on cirrhosis of liver in India, peptic ulcer in India, and the problem of chronic diarrheas in India, moderated respectively by Prof. V Ramalingaswami, Prof. P N Chhuttani and Prof. S S Mishra.

After the meeting, Dr. Bockus and Dr. Barborka went to Bombay, where they met with a group of doctors interested in digestive diseases. Some of them – Dr. P Raghavan, Dr. F P Antia, Dr. B J Vakil and Dr. B D Pimparkar – had earlier associations with Dr. Bockus. Later, Gen. Amir Chand visited Bombay and brought gastroenterologists there into the fold of the ISG. The next year Dr. Raghavan was unanimously elected President of the Society. Drs. S J Baker, F Narielwalla, V I

Mathan and B M Pulimood from the Christian Medical College, Vellore, along with Dr. R Subramaniam and Dr. N Madanagopalan from Medical College, Madras became active members of the Society, giving it its all-India character.

The first annual conference of the Society, along with the annual conference of the API, was held in Madras January 1961. Gen. Amir Chand's Presidential Address was on gastric acid secretion, the only one on a scientific subject.

The second annual conference was held in Indore; Dr. Raghavan was the President. The theme of his learned address was the past and future of gastroenterology in our country and the role the Society can play to foster and accelerate its development. The third annual conference was held in Calcutta; Col. Sangham Lal was President. A committee was constituted under the chairmanship of Dr. Vakil to revise the constitution of the Society.

I finished my tenure as Secretary in 1963; Dr. B N Tandon took over as the next Hon. Secretary. In 1964 the Society parted company with the API. It hosted the Asian Conference of Gastroenterology in Chandigarh. Dr. P N Chhuttani was the President of the Society as well as of the Asian Pacific conference. The presence of a large Japanese contingent with their latest endoscopic equipment was a great stimulus for endoscopy in our country. With this international meeting, our Society became a part of the OMGE.

Dr. Wilfred Card from the University of Edinburgh attended the conference in Calcutta. He had been President of the British Society of Gastroenterology and chief editor of *Gut*. On his return to the UK he wrote about his impressions of gastroenterology in India and what its future development should be, in an article, "Open letter to the Indian Gastroenterologists". He emphasized that gastroenterologists in developing countries should not be disheartened by lack of sophisticated technology and skills. They can effectively contribute to the advancement of scientific knowledge with the help of locally available techniques; some of the greatest advances of science have been achieved by using simple techniques. What is really needed most is an inquisitive and penetrating mind, unbending honesty, and total commitment to the search for truth.

This important message should ever remain an abiding guideline for Indian gastroenterologists.

## Indian Society of Gastroenterology and Indian Journal of Gastroenterology: past, present, future

H G Desai

Mumbai

The Indian Society of Gastroenterology (ISG) was formed in 1960 with 11 members, prominent among whom were Lt. Col. Amir Chand, and Professors P N Chhuttani, P Raghavan, F P Antia and H K Chuttani. Realizing their great importance and expecting rapid expansion of knowledge in hepatology and endoscopy, the Liver Study Group of India (LSGI, 1973) and Society of Gastrointestinal Endoscopy of India (SGEI, 1978) were formed by members of the ISG. Professors Antia and D V Datta took the initiative to form the LSGI, and Professors B J Vakil and Antia for the formation of the SGEI. At the annual conference of the ISG at Hyderabad, Dame Sheila Sherlock suggested the name LSGI be changed to Indian Association for Study of the Liver (INASL).

The first issue of the *Indian Journal of Gastroenterology* was published in 1982 with Prof. Vakil as editor. With his untimely death soon after, the editorship was entrusted to Prof. Antia. His strenuous efforts to maintain high standards (excellent printing, punctual publication) enabled its early recognition and its indexing in *Medline / Index Medicus*, *EMBASE / Excerpta Medica*, and now the National Informatics Center. Late Prof. S R Naik and Philip Abraham worked hard to maintain this standard.

At present, the ISG has approximately 1500 members. The progress made by its members may be summed up as good (medical care), average (medical education) and poor (medical research). Despite notable contribution to world medicine by a few research workers, the overall research activities in most of the institutions is much below the desired level. With the advent of endoscopy, research activities have significantly decreased, as a great deal of time is spent in endoscopy in most institutions.

Several Indian gastroenterologists who have settled abroad have made significant contributions to world medicine. A few regularly attend the annual ISG meetings and impart their knowledge to improve our standard. Their laudable effort should be recognized by the ISG and an appreciation award should be started. Honorary membership of ISG

should be offered to a few most outstanding gastroenterologists.

The strength of any medical Society is judged by the number of its members and their high-quality contribution to medical care, education and research. None should underestimate the high degree of integrity required from each member of the Society. The character of any individual is not judged by the spoken or written word but by his or her action.

May I end this on a personal note? I joined the department of Gastroenterology as Registrar to Prof. Antia in 1962. During my association with the ISG (45 years) and the *Journal* (25 years), I have had wide and varied experiences, and my attachment to both has steadily and significantly increased. Nothing will give me greater pleasure than the continuous and rapid progress of the Society and the *Journal*. This note carries good luck to both for a bright future.

## Hepatology in Kolkata

D N Guha Mazumder

Kolkata

Kolkata (Calcutta), once the capital of India, is a city rich in heritage and history. Western medical education in this city germinated in 1835 when Medical College, Calcutta was established. However, research on gastrointestinal and liver diseases started earlier here, by British medical scientists at the School of Tropical Medicine (STM). Relentless efforts by a band of Indian and Western scientists in the city helped in development of clinical care and basic research in medicine, towards the end of the nineteenth century. As hepatology has evolved as a distinct speciality, it is worthwhile to review some of the important contributions made from the city towards improving the understanding and management of various liver disorders.

### *Hepatic amebiasis*

As early as in 1828, Annesle<sup>1</sup> described 26 cases of hepatic abscess with dysentery from Bengal. The etiological relationship of amebae to liver abscess was first shown by Robert Koch (1887)<sup>2</sup> who, while studying cholera, found two cases of liver abscess complicating dysentery, and demonstrated amebae in the wall of capillaries near the hepatic abscess. Rogers (1902)<sup>3</sup> subsequently published features of amebic liver abscess in the

largest number of cases (37) reported till then. He was the first person who used salts of emetine parenterally for the treatment of amebic dysentery and liver abscess.<sup>4</sup> In 1925, Boeck and Drbohlar<sup>5</sup> from STM found out a special medium for the cultivation of *E. histolytica* and in almost every large laboratory in the world their work received immediate confirmation.

#### *Indian childhood cirrhosis (ICC)*

Dr. B C Sen<sup>6</sup> reported the entity "infantile cirrhosis" as early as 1887, and for quite some time it was called Sen's disease. Later the disease was named Indian childhood cirrhosis. The peculiar geographic restriction to the Indian subcontinent, the male predilection, the familial clustering and the distinctive clinical and histological features of the disease have been the subject of speculation for many years. A chance finding in 1978 revealed a striking association between exceedingly high hepatic copper content and ICC.<sup>7</sup> There was a regional difference in the prevalence of ICC in the country, with a rapidly falling incidence of the disease over recent years.

#### *Non-cirrhotic portal fibrosis (NCPF)*

Study of etiology and management options in portal hypertension in this country, particularly of the non-cirrhotic type, was to a large extent initiated from Kolkata. The term Bengal splenomegaly was coined by De and Tribedi (1939)<sup>8</sup> to describe huge splenomegaly that could be different from that caused by malaria or kala-azar. They postulated that these could be the effect of the reaction of the spleen to some unidentified infective agent(s).

Chowdhury *et al* (1956)<sup>9</sup> reported improvement in the huge splenomegaly in some of the cases they studied with the use of antimalarial treatment. Basu and colleagues<sup>10</sup> observed in 1957 that there was a group for cases with chronic splenomegaly where the etiology and pathogenesis were not apparent even after detailed investigation. Splenectomy alone produced regression of the manifestation of portal hypertension in about a quarter of the cases. Dilatation of splenoportal venous system with collaterals and cut-off pattern of portal vein branches were frequent observations in cases of so-called tropical splenomegaly and splenomegalic cirrhosis. They considered that these were due to large splenic venous flow in the absence of significant distortion of the intrahepatic radicles or obstruction of extrahepatic portal vein. The kind of intrahepatic pathology observed in

splenomegalic cirrhosis following long-standing splenomegaly was quite distinctive from primary cirrhosis of the liver.<sup>10,11</sup>

Ramlingaswami and colleagues (1962)<sup>12</sup> from Delhi, while describing the pattern of cirrhosis of the liver in northern India, isolated a group of 16 cases that they preferred to call type III or splenomegalic type of cirrhosis, a name that was earlier used by Basu and Das.<sup>13</sup> Large splenomegaly of many years' duration was the first and dominant feature, gradually to be followed by onset of features of portal hypertension. The portal and splenic veins appeared markedly dilated without demonstrable block. The majority showed varying degrees of portal and interlober scarring. The hemodynamic parameters of the condition were reported by Boyer *et al* (1966)<sup>14</sup> and these revealed significant gradient between intrasplenic pressure and wedged hepatic venous pressure, denoting presinusoidal block in the majority and increased hepatic blood flow in a few.

This condition was described by the Kolkata group (Basu *et al*, 1967)<sup>15</sup> as non-cirrhotic portal fibrosis, while other names given to this condition by the Delhi group were primary portal hypertension<sup>16</sup> and obliterative portal venopathy.<sup>17</sup> At a workshop organized by the Indian Council of Medical Research (1969)<sup>18</sup> at New Delhi, the clinical, hemodynamic and histopathological parameters of the cases were evaluated from data presented from different parts of the country, and the term NCPF was unanimously accepted for describing the condition.

*Arsenic and NCPF:* A lot of work has been carried out to identify the etiology of the condition. Guha Mazumder *et al* (1988)<sup>19</sup> demonstrated high level of arsenic in the liver of 12 patients with NCPF in Kolkata who were drinking arsenic-contaminated water and had a high level of arsenic in their hair, nails and liver. Chronic arsenic toxicity has been reported to be associated with non-cirrhotic portal hypertension earlier. Dutta *et al* (1979)<sup>20</sup> reported a high level of arsenic in the liver in four of nine patients with NCPF and portal hypertension, although only two of them had drunk water containing a high concentration of arsenic. Earlier, non-cirrhotic portal hypertension was reported in cases who were treated for long periods with Fowler's solution, which contained arsenic.<sup>21,22,23</sup> Arsenic toxicity from contaminated tubewell water had been reported from eight districts of West Bengal since 1983. From hospital-

based studies on 248 cases of arsenicosis, hepatomegaly was found in 190 patients (76.6%). NCPF was the predominant lesion (91.3%) on liver biopsy carried out on 69 cases. Portal hypertension was found in 39.4% of cases. The arsenic content in the liver was high in 23 of 29 cases, the maximum being 6 mg/Kg.<sup>24,25</sup>

In the murine model, continuous feeding of arsenic-contaminated water for 15 months was found to be associated with liver fibrosis. BALB/c mice were given water contaminated with arsenic (3.2 mg/L) *ad libitum* for 15 months, the animals being sacrificed at 3-month intervals. Oxy-stress was observed to be the predominant biochemical event in causing liver damage due to chronic arsenic exposure in experimental animals. Progressive reduction of hepatic glutathione and enzymes of the antioxidative defense system were found to be associated with lipid peroxidation during chronic arsenic exposure. Liver histology showed fatty infiltration at 12 months and hepatic fibrosis at 15 months.<sup>26</sup>

Further studies in experimental animals showed significant increase of lipid peroxidation and protein oxidation in the liver associated with depletion of hepatic thiols (GSH, PSH), and antioxidant enzymes (GPx, catalase) due to prolonged arsenic exposure in a dose-dependent manner. Significant elevation of hepatic collagen occurred at 9 and 12 months in all the groups, associated with significant elevation of TNF- $\alpha$  and IL-6. However, arsenic level in the liver increased progressively from 3 months onwards. There was a positive correlation between the hepatic arsenic level and collagen content, LPx and IL-6. Further, there was significant negative correlation between GSH and TNF- $\alpha$  and LPx. It was concluded that increasing dose and duration of arsenic exposure in mice cause progressive increase of oxy-stress and elevation of cytokines associated with increasing level of collagen in the liver.<sup>27</sup>

The etiopathogenesis of NCPF appears to be multifactorial. The initiator may be chronic or recurrent antigenic challenge, like parasitic infestation of the gut, or chronic metallotoxicity, e.g., chronic arsenic toxicity. The effect may primarily be collagenesis occurring at the perisinusoidal and periportal region. Portal hypertension in NCPF may be a singular effect of portal fibrosis or result from increased portal flow consequent to splanchnic hyperdynamicity. Alternatively, in some cases, there may be primary

splenomegaly caused by immunological abnormality related to infection or recurrent antigenic challenge or to hematological disease. Splenomegaly is frequently associated with increased portal flow, which may produce increased hepatic vascular resistance and portal hypertension. Obliterative portal venopathy observed by many may be the secondary effect of immunological abnormality or increased portal flow.

#### *Pulmonary and cardiovascular disorders in portal hypertension*

Hepatopulmonary syndrome (HPS) is known to occur in decompensated cirrhosis. This is probably due to intrapulmonary shunting through microscopic arterio-venous fistulae. Vasoactive substance, probably an increased local NO level, due to hepatic dysfunction has been implicated in the pathogenesis of HPS. De *et al*<sup>29</sup> reported HPS in 3 of 24 patients suffering from NCPF without cardiopulmonary disease. The group also demonstrated occurrence of HPS in Budd-Chiari syndrome and inferior vena caval obstruction, some of which responded to cavoplasty.<sup>30,31</sup> Cardiac diastolic dysfunction, previously described only in cirrhotics and termed as cirrhotic cardiomyopathy, was also reported to occur in NCPF.<sup>32</sup>

#### *Surgical management of portal hypertension*

Evaluation of various surgical procedures for the management of portal hypertension has been carried out at the Institute of Post Graduate Medical Education and Research (IPGME&R), the first report being published in 1957. Of 600 surgeries for portal hypertension carried out by Basu and his colleagues between 1950 and 1978, 190 were portocaval and 75 splenorenal shunts.<sup>33</sup> Portocaval shunt was found to offer better protection against death due variceal bleed as compared to splenectomy and splenorenal shunt, but as far as long-term survival is concerned splenorenal shunt produced somewhat better results.<sup>34</sup>

An important contribution of this center was the development of a special type of shunt procedure, selective distal splenocaval shunt for decompression of portal hypertension in children suffering from extrahepatic portal vein obstruction.<sup>35</sup> The standard splenorenal shunt that was usually performed for portal hypertension in adults was frequently found to be difficult in young children because of the narrow splenic vein diameter. In splenocaval shunt the inferior vena cava could be truncated and mobilized to make end-to-side

anastomosis with a narrow splenic vein.

#### *Vasodilators in the management of portal hypertension*

Propranolol is known to prevent variceal bleeding in portal hypertension, and reduction of hepatic venous pressure gradient (HVPG) to  $\leq 12$  mmHg is protective. However, only about one-third of patients taking propranolol achieve such reduction. De *et al*<sup>36</sup> reported that single-sitting hemodynamic assessment of acute response to high-dose oral propranolol differentiates between responders and non-responders. The group also evaluated hemodynamic response to other drugs like carvedilol and losartan in cirrhotics. They found that losartan is superior to propranolol while carvedilol is not, in achieving target response of HVPG reduction.<sup>37,38</sup>

#### *Non-specific liver disease in the tropics*

Portal fibrosis without clinical evidence of portal hypertension was a chance finding during a study of non-specific hepatomegaly at Kolkata.<sup>39</sup> These patients frequently suffer from vague dyspeptic symptoms and on clinical examination hepatomegaly is the only finding. Liver function tests are usually within normal limits. Except for associated *Ascaris* infection, no other abnormality could be found in 57% of these cases.

#### *Viral hepatitis*

Limited information is available about the prevalence and genotype distribution of hepatitis C virus in the general population in India. A community-based epidemiological study, carried out by Chowdhury *et al*<sup>40</sup> in one of the districts of West Bengal, revealed a prevalence of anti-HCV positivity of 0.9% among 2973 people studied. Genotype study showed HCV types 1b in 9.5%, 3a in 38.1%, 3b in 28.6%, and unclassified in 23.8%. A similar rural population-based epidemiological study on HBV infection showed that HBV acquisition starts in early childhood and peaks in adulthood. Most infections in the community are *e* antigen negative and inactive. The point prevalence of PC stop codon and BCP mutants was found to be low in this primarily inactive and asymptomatic study population in eastern India.<sup>41</sup>

Hepatologists in the city are also involved in multicenter trials of different drugs for the treatment of chronic HBV and HCV infection.

#### *Genetic study in Gilbert's syndrome (GS)*

To identify the variants in UDP-glucuronosyltransferase 1 (UGT1A1) gene in GS

and to estimate the association between homozygosity for TA insertion and GS in India, as well as the frequency of TA insertion and its impact among normal controls, a genetic study was carried out on 95 cases and 95 controls at IPGME&R. Among GS patients, 80% were homozygous for the TA insertion, which was several-fold higher than reports from other ethnic groups. The mean UCB level was elevated among individuals with only one copy of this insertion, which was not significantly different from those with two copies. Many new DNA variants in the UGT1A1 gene were discovered, including a trinucleotide (CAT) insertion in the promoter found in a subset (10%) of GS patients, but not among normal controls.<sup>42</sup>

#### *Drug-induced hepatotoxicity in experimental animals*

Anti-tubercular drugs are the commonest agents that not infrequently cause serious drug-induced liver disease. Knowledge about the cellular and biochemical mechanism of liver injury is limited. Effect of administration of isoniazid and rifampicin on mitochondrial function in experimental animals was studied at the IPGME&R. Oxidative stress in the mitochondria and inappropriate mitochondrial permeability transition are important in the pathogenesis of apoptotic liver cell injury in isoniazid and rifampicin hepatotoxicity. The phenomenon is GSH dependent, and methionine supplementation might have a protective role.<sup>43</sup>

#### *Conclusion*

Research on liver diseases in Kolkata was concentrated on topical liver problems like amebic liver disease, Indian childhood cirrhosis, NCPF and portal hypertension, and liver affection in arsenicosis. However, in recent years there is a shift in interest to liver problems with a global perspective, e.g., chronic liver disease due hepatitis B and C infection, drug-induced liver disease, metabolic liver disease, etc. Today's researchers have joined hands with colleagues in other research centers in the country, on many occasions as collaborators in multi-institutional programs with common study protocols. It is expected that this multicenter liver research will generate proper scientific data, obviating many confounders like geographical and ethnic variability and diversity in the population in a big country like ours.

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## Stem cells in digestive diseases

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Hyderabad

Stem cell research is advancing at an incredible pace, with new discoveries and clinical applications being reported from all over the world. Stem cells are self-sustaining and can replicate themselves for long periods of time. These characteristics make them very promising in treating debilitating disorders like heart diseases, liver diseases, stroke, spinal injuries, Parkinson's disease, Alzheimer's disease, retinal degeneration, muscular dystrophy, diabetes mellitus, etc. Stem cell therapy has generated interest in clinicians and the public. Clinical applications have been reported in heart diseases, spinal cord injury, ischemic limbs, retinal degeneration, and liver diseases.

Stem cells can be classified into two major categories, according to their developmental status: embryonic stem cells and adult stem cells. Embryonic stem cells are isolated from blastocyst.<sup>1</sup> Although this opens up the enticing possi-

bility of "designer" tissue and organ engineering, it is clouded by the ethical issues that surround the use of these cells harvested from early human embryos. Adult stem cells are specialized cells found within many tissues of the body, where they function in tissue homeostasis and repair. They are precursor cells capable of differentiation into several different cells. They have been propagated from bone marrow, liver, brain, skin, skeletal muscle, adipose, cord blood, Wharton's jelly and peripheral blood.

### Liver stem cell transplantation

Although liver transplantation is a method of choice in treating patients with severe liver diseases, shortage of donor organs, requirement for long-term immunosuppression, high cost, need for major surgery and multidisciplinary approach remain major obstacles for liver transplantation. Transplantation of hepatocytes has therefore been proposed as an alternative.<sup>2-5</sup> Findings in various animal models of hepatocyte transplantation<sup>6</sup> encouraged clinical trials in humans.<sup>7,8,9</sup>

The major limitations of hepatocyte transplantations are requirement for large number of cells and the low proliferative activity of mature hepatocytes.<sup>10</sup> In striking contrast, liver stem cells are capable of proliferating and differentiating into functionally specialized cells.

The liver has a large regenerative capacity. In prolonged liver damage or inhibition of hepatocyte regeneration, the oval cells located in the canals of Hering can act as facultative stem cells.<sup>11,12</sup> Isolation of hepatic progenitors from human source is a major challenge for the clinical application of this therapy. Recently hepatic progenitors have been isolated from the following sources:

*Intrahepatic sources:* Cadaver livers that are considered of insufficient quality for organ transplantation are one of the sources of hepatic progenitors. Hepatocytes isolated from aborted human fetuses are another potential source.

*Extrahepatic sources:* These include autologous bone marrow,<sup>13</sup> umbilical cord blood, Wharton's jelly, peripheral blood monocytes, and adipose tissue.

Liver stem cells can be transplanted through several routes:

- Intraperitoneal, and percutaneous intrahepatic artery catheterization in acute liver failure
- Umbilical vein catheterization, percutaneous

intrahepatic route, and portal vein or intrahepatic artery catheterization in metabolic liver diseases

· Intrasplenic artery, hepatic artery catheterization, and portal vein catheterization in chronic liver diseases

Attempts have been made to infuse cells from autologous bone marrow along with granulocyte-stimulating factor. The preferred route is hepatic artery catheterization. At our center in Hyderabad two patients with Child B cirrhosis of liver have been given this therapy. Similar attempts have been made at Hammersmith Hospital, UK.

#### *Gut stem cells*

The gastrointestinal tract is a rich repository of stem cells. Attempts have been made in mice to harvest neural stem cells from the GI tract. This has potential in the treatment of motility disorders like achalasia, congenital hypertrophic pyloric stenosis, and diabetic gastroparesis.<sup>14</sup>

Stem cells have been transplanted to treat refractory fistulas in patients with Crohn's disease.<sup>15</sup> In the intestine, multipotent stem cells are thought to be housed in the crypt base. The work carried out by Krause *et al*<sup>16</sup> using a single stem cell demonstrated differentiation to epithelial cells throughout most of the gastrointestinal tract.

#### *Stem cell research in India*

Stem cell research programs are being initiated in India for promoting both basic and translational research in view of its potential applications. Over 30 institutions, hospitals and industries are involved currently. There is a need to develop state-of-the-art infrastructure to carry out such research; there is a dearth of basic scientists in this area. Clinicians are keen on taking up clinical applications based on the results reported overseas. Current attempts are focused on adult stem cells using autologous bone marrow as potential source. Cord blood banking is being established, but clinical applications using cord blood have not been undertaken. Embryonic stem cells are not used at present for clinical applications as this is attended with ethical and regulatory problems.

The Indian Council of Medical Research (ICMR) and the Department of Biotechnology have jointly drafted guidelines for research and clinical applications with stem cells. Once these guidelines are approved by the Ministry and Parliament, issues involved in research, ethics, regulation and monitoring of clinical applications will be addressed by the regulatory committees pro-

posed in the draft.

We need good manufacturing facilities to be established in institutions that are undertaking clinical applications. There is a program to undertake multicenter projects in stem cell therapy in liver diseases, especially Child A and B cirrhosis and chronic hepatitis, under the auspicious of the ICMR. This will later be extended to acute and metabolic liver diseases.

The clinical applications of stem cell research are virtually without limit. Breakthroughs in this field will probably yield not only new forms of treatment, but provide a greater understanding of pathological mechanisms. The combination of stem cell transplantation and gene therapy is a particularly exciting one. Stem cell therapy is yet in the experimental stage; a lot of data needs to be defined and the clinical application has to be carefully monitored.

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## Fading memories and some thoughts

B D Pimparkar

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I thank the Editor of the *Indian Journal of Gastroenterology* for asking me to put in words my fading memories of gastroenterology in India over the past half a century.

### *Our Society*

While I was an undergraduate, the Association of Physicians of India was established in 1948. All specialities in internal medicine were represented; interest in gastroenterology took root there, with contributions from several internists. The subsequent history of gastroenterology in India has been written by my close friend and first General Secretary of the Indian Society of Gastroenterology (ISG), Dr. H K Chuttani. Late Professor S R Naik refreshed my memory when he stated, in the souvenir published at the annual conference of the ISG at Lucknow in 2001, that late Professor P Raghavan (with late Professor Erulkar) started a Gastroenterology Society in Bombay in 1958, but was generous enough to merge it with the ISG started by Col. Amir Chand and late Professor P N Chuttani in 1960 at the suggestion of my mentor, late Dr. Henry L Bockus.

From its inception, the ISG has been broad-based, including not only physicians and gastroenterologists but also specialists in basic sciences, para-clinical disciplines, investigative departments, and surgeons. Starting with a few members, the ISG has grown to more than 1500 life members now. With growth over the years in not only numbers but also in subsections of gastroenterology, there were demands to start other related societies. Although not personally opposed, I felt that hepatology, endoscopy and pancreatology societies should be formed only when enough interested specialists became available. I was in a minority, and these societies were formed early. During my presidency of the ISG in 1981, I suc-

ceeded in holding joint sessions of these societies in Calcutta.

### *Our institutions*

Dr. Bockus first trained Prof. Raghavan and later late Professor F P Antia and me. All were offered full-time teaching posts in the US but all three preferred to return to India to set up departments of gastroenterology.

In our institutes, we held weekly conferences in internal medicine, GI radiology and clinico-pathologic conferences for postgraduates with radiologists, pathologists and other specialists. With Prof. Antia and late Professor B J Vakil, monthly joint GI conferences were started in teaching institutes in rotation, and these still continue under the local GI research society. We had applied for recognition for postdoctoral studies at our institutes in gastroenterology, hematology, nephrology and endocrinology, with Bombay University and the National Board of Examinations. Unfortunately, this was not granted till after my retirement, because four of these superspeciality departments were headed by honoraries like me!

While returning from the World Congresses of Gastroenterology in 1974, and while visiting the Johns Hopkins University in Baltimore, I saw for the first time a huge ultrasound machine. We pleaded to procure these and other imaging devices, but they became available only after my retirement. I also saw for the first time an auto-analyzer for biochemical investigations at the Queen Elizabeth Hospital, Birmingham. I obtained purchase quotations for such an auto-analyzer for our institute, but this again was made available only after my retirement. While in the UK, I was interested in getting, for research trials, the first histamine H-2 receptor antagonist, burimamide; sadly, I was informed that this research product was to be tried only in the UK. I was, however, assured supply of pentagastrin for research projects.

While under training in the US, I was fortunate to work with and observe Professor Schindler use a semi-rigid upper GI endoscope. In my early years in India, while such a scope was being used, it perforated through a gastric ulcer; this patient fortunately recovered on conservative management, as advocated by late Professors Herman Taylor and Arthur DeSa. Ours was perhaps the first department in India to obtain Herschowitz's flexible fiberoptic upper GI endoscope.

Gastroenterology services, being part of internal medicine, was assigned beds in the General

Medicine ward. My offer to give up internal medicine to develop the speciality was never accepted. I regretted this, but I must admit that it kept up my touch with internal medicine. I wrote an article titled "Hurry, worry, curry" as a cause of acid-peptic disease. How misled all of us were till the discovery of *Helicobacter pylori* by Robin Warren and Barry Marshal.

In spite of frustrations, I was able to set up research studies with the help of my postgraduates, assistants, statistician, and colleagues, with research grants from pharmaceutical industries. We were the first to study the effects of spices and various Indian foods on gastric secretion. Most of our research work was on gastric secretion with augmented histamine or pentagastrin tests in various diseases, and absorption tests in malnutrition and malabsorption syndromes, including postgastrectomy state, abdominal tuberculosis, cirrhosis of liver, and parasitic diseases. With my interest in nuclear medicine, other projects included nuclear medicine in gastroenterology, trypsin levels, and toxic and essential trace elements in various liver diseases. I gratefully acknowledge the help I received from various individuals and sources, including the Bhabha Atomic Research Center, to complete these.

#### *Suggestions for the future*

During the past 50 years, there has been a quantum leap in biotechnology. Molecular biology and genetics have also provided fascinating tools. The new emphasis on immune cells with simultaneous emergence of molecular biology were powerful influences on medicine. The synergistic union of new ideas and techniques resulted in better understanding of immune responses and therapy, furthering the process of transplantation surgery.

Most of the common and important diseases are polygenic polyallelic in origin, with quantitative traits. Molecular markers will revolutionize the unveiling of these quantitative traits. Understanding the molecular mechanism causing disease will lead to better classification of diseases and better management. How to use adequately this complex multi-parametric information in clinical medicine will depend on continuous education of both laboratory professionals and clinicians.

Biotechnology may be financially supportive to the institute that runs it, but not to practicing gastroenterologists; this may be why it is scarcely discussed in ISG conferences. Future gastroenterologists will need to be proficient in some of

these techniques.

There has been considerable discussion on 'evidence-based medicine'. This is a good idea and should not only be supported but followed by ISG and the *Journal*.

Recently, there has been a lot of discussion on doctors' collaboration with drug companies for clinical trials, and academic freedom. In 2004, the members of the International Committee of Medical Journal Editors published a joint editorial promoting registration of all clinical trials. I think ISG and the *Journal* should take note of this and publish guidelines for ISG members. Institutions should also take a lead on this.

At present the ISG concentrates on organizing its conferences. Growth in life membership, a credible website, professionally run indexed journal, continued active membership of international bodies, sponsoring young researchers and delegates to international conferences in gastroenterology, and holding joint sessions with other gastroenterology associations, are all good and welcome. However, unlike national societies in the West, ISG is practically powerless in national affairs. I feel, with close collaboration with the National Board of Examinations (NBE), ISG should take active part in accreditation and teaching of gastroenterology in medical schools in India. Similarly, with the Indian Council of Medical Research (ICMR), it should be more active in investigating common gastrointestinal diseases, insisting on equitable distribution of ICMR research funds for any national survey or research projects undertaken by the ISG. This collaboration and consultation would be easy if an expert committee from the ISG is associated with the NBE and ICMR. Expert committees of the ISG should also provide practical guidelines both for gastroenterologists and the public in common gastrointestinal disorders. These guidelines may be published in the *Journal*.

At the inception of the *Indian Journal of Gastroenterology*, both the Governing Council and the General Body of the ISG had resolved that the plenary session papers and Presidential Address be sent to the *Journal* for publication. I regret that this has not been implemented, and request the Governing Council to implement it. The Editors of the *Journal*, of course, deserve congratulations for doing a wonderful job with the *Journal*.

As stated above, Prof. Raghavan was gra-

scious to withdraw the registration of the gastroenterology society in Bombay in favor of one in New Delhi. As a mark of appreciation, the ISG should resolve on establishing a permanent office for the *Journal* in Mumbai.

In 1858, Charles Darwin stated, "Evolution depends on various variations that permit adaptation to changing environment." We should remember this. But let not biotechnology and computers overtake our clinical medicine and humanism.

## Thoughts about the Society

**Benjamin M Pulimood**

Vellore

**I** am glad to see the steady growth of membership in the Indian Society of Gastroenterology (ISG) and its record in conducting the annual conferences without a break.

My association with ISG started after I returned to Vellore from the UK in 1963 with MRCP (E), with Gastroenterology as subspeciality. Drs. Sheila Sherlock and Bill Sircus were my examiners. I was trained as a gastroenterologist by Dr. Nelson Coghill of West Middlesex Hospital and by interaction with Dr. Avery Jones of Central Middlesex Hospital and Sir Christopher Booth of Hammersmith Hospital. I also had the privilege of being a tutor for a postgraduate course in gastroenterology conducted by the British Postgraduate Federation in 1962. I attended the annual conference of the British Gastroenterology Society in 1961-62.

The leaders in the ISG then were Drs. P N Chuttani, Badri Tandon, Selwyn Baker, Ashok Seghal, S K Mehta, B K Aikat, B J Vakil, H G Desai, D V Dutta, F P Antia, H K Chuttani, and N Madanagopalan. The most brilliant research worker was K N Jeejeebhoy, who got disillusioned and left for Canada.

In 1965 or so we conducted the Asian Congress of Gastroenterology in Chandigarh. A national seminar on ulcerative colitis was organized, with Dr. P N Chuttani as chairman. I was an invited participant.

I took over as Hon. Secretary of the ISG after Dr. B N Tandon, at the end of the '60s, and continued for 6 years. Dr. Madanagopalan was the Treasurer. One of the balancing acts I had to do was to keep the members from the north, west,

east and south of the country together. During that period some of the major achievements were:

1. Rewrite the Constitution to limit the period of office and give due stress for research and scientific activities. Drs. Vakil, J S Shah, Baker and I did the drafting.

2. Define guidelines for conducting the annual conferences and start meetings of regional chapters.

3. Establish some of the orations.

4. Inauguration of the conference by the president of the Society instead of politicians.

5. Institute the Col. Amir Chand trophy for the best research team.

6. Formation of the Endoscopy Society and Liver Disease Society with all-round goodwill. The Society became a member of the World Gastroenterology society. We started sending representatives to the World Congress. I was invited to chair a session for the OMGE conference in New Zealand in 1980 or so. The leading research teams at that time were at the Christian Medical College, Vellore; All Indian Institute of Medical Sciences, Delhi; and Post Graduate Institute of Medical Education and Research, Chandigarh. Institutions in Bombay were lagging behind. Lucknow and Hyderabad and other centers were not on the scene yet. The main work was on tropical sprue and malabsorption syndromes and liver diseases.

What I feel about Gastroenterology today is that too much time is spent on endoscopies and not enough time given for taking adequate history of the patient, resulting in delays and unnecessary investigations. Endoscopies are repeated too many times, with wastage and discomfort for patients. We are lagging behind in fundamental research. There is place for well-planned multicenter epidemiological studies in various fields. I am glad to see good training centers developing all over the country. As suggested at some of the meetings, the contents of these courses and recording of minimum-procedure experience through log books should be built in. There should be an ethics committee to take up complaints and monitor the work of the members.

ISG and its members should be congratulated for the tremendous progress and high quality of clinical work. We need to welcome international workers and consultants and researchers to come and work in India, and make it possible by

negotiating with the Medical Council of India for work permits for them. One of the concerns expressed by Dr. Tandon was that we should work closely with experts in nutrition, which has not yet materialized. We should also develop a way of recognizing training in other countries, including their degrees, by giving appropriate screening and evaluation and certification.

## Gastroenterology in India

N Rangabashyam

Chennai

### *M*edical gastroenterology

What gastroenterology is today was practiced way back by Charaka and Susrutha. The first physician in Ayurvedic medicine was Dhanvantari, incarnation of Lord Vishnu, with herbs and leech on one hand and *amritha* or nectar on the other hand. He was considered as god of medicine and was followed by Charaka and Susruta.

India can take pride in first documenting one of the childhood liver diseases, right from the first half of this century, though under different labels. Indeed, Dr. B C Sen recorded the entity "infantile cirrhosis" as early as 1887, and for quite some time it was called "Sen's disease".

While one is quite familiar with the masterly publications of Drs. N C Nayak and V Ramalingaswami, special mention must be made of contributions by Drs. Radha Krishna Rao (1934), K Narayanmurthi and T S Thirumurthy (1939), M B Prabhu (1940), B K Aikat and Srivastava (1956), S T Achar, V B Raju and Sriramachari (1960), to whose name Dr. Sundaravalli's also needs to be included.

We should remember the outstanding contributions by Drs. Govinda Reddy and C Mohanorangam (1945) on the mechanism and occurrence of jaundice in hepatic amebiasis, as also how hepatic amebiasis (liver abscess) can be a great mimicker, presenting as occult chronic Budd-Chiari syndrome apart from a variety of other conditions, as was so vividly brought out in autopsy studies by Aikat *et al* (1979) from Chandigarh.

We can never forget the role of Col. Donovan in the discovery of Leishman-Donovan bodies as the causative agent of kala-azar. Credit for this work from Madras in 1903 is shared between the General Hospital, Madras and Government Royapettah Hospital, Madras where he had worked.

The outstanding contributions of Ronald Ross, Leonard Roger, McCarrison, Short and Megaw on common malarial, diarrheal and nutritional diseases in India should be highlighted.

Dr. T Baskara Menon from Andhra Pradesh will always be remembered for his monumental work on "splenic anemia" around 1935, as much as the comment by Prof. Ratnavelu Subramanian in the late fifties that cirrhosis of the liver in Madras differs from their counterparts in Western countries with regard to their etiology, mode of presentation, management and prognosis. Further, he was the earliest to suggest that at least in some patients with established cirrhosis of the liver, the herbal plant *Eclipta alba* has a role in restoring the liver, probably by its fibrinolytic and possibly hepatotropic action.

Drs. T Baskara Menon and D R Annamalai (1935) from the Department of Pathology observed a correlation between cirrhosis and primary malignancy of the liver, and commented that sclerogenic agents that induce cirrhosis in India are possibly different in that they set up a degree of chronic irritation sufficient to induce malignant growth.

The work of Dr. S J Baker and the team from Christian Medical College, Vellore from the early '60s was carried to greater heights by Drs. Minnie Mathan and V I Mathan through studies on possible viral etiology and ultrastructure changes in the small as also large intestine mucosa. These are highly commendable works that are cross-referenced in innumerable publications.

Prof. F P Antia in Bombay was the first to do diagnostic laparoscopy in India and one of the stalwarts in medical gastroenterology. Dr. Geeverghese's work in Trivandrum on tropical pancreatitis is worth mentioning. Dr. P N Chhuttani, Director and Administrator, Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh, contributed a great deal to our understanding of liver pathology, and structured the training and teaching of students in medical gastroenterology. Drs. B D Pimparkar and P B Desai of Bombay did research work in gastrointestinal pathology, and their work is well known in international literature. The research by Dr. C M Habibullah in fetal liver cell transplant is well known.

In 1971, a DM (GE) course was started at the All India Institute of Medical Sciences (AIIMS) by Prof. B N Tandon, in the Gastroenterology and Human Nutrition Unit, and later at Chandigarh. In Madras Medical College a Gastroenterology Clinic

was run by Dr. Satagopan (1962). It was Prof. N Madanagopalan (1964) who popularized and created a separate entity for gastroenterology from 1965 onward and started the DM course in 1980.

### *Surgical gastroenterology*

Although medical gastroenterology had been a separate entity for over three decades, its counterpart – surgical gastroenterology – evolved as a speciality only in the 1970s, when I established the Department under a Government Order in 1978 at Madras Medical College and Government General Hospital. I had been running a surgical gastroenterology division at Thanjavur Medical College (1964-69), Stanley Medical College (1969-74) and Madras Medical College (from 1975).

Workers in the past took interest not only in offering therapy but also evinced keen interest in epidemiological and cost-benefit evaluation of prophylactic measures. Dr. W J Niblock, for example, is famous for documenting the first successful gastrojejunostomy for gastric outlet obstruction due to peptic ulcer from India; he conducted it at the General Hospital, Madras on March 2, 1905. He is also the one who wrote the widely quoted article on “Epidemiology of cancer in India” as early as 1902.

Sheppard's name is very closely linked with further advancement in the technique of abdominal surgery. He published in 1936 an article titled “A few points on the technique of gastrojejunostomy”, while he was working at Madurai. Dr. D R Somerville at Neyyur did a number of partial gastrectomies for duodenal ulcer in 1900. Col. Pandalai is credited with carrying out the first successful partial gastrectomy in Madras as early as 1926 in Government General Hospital, Madras. The early surgical works on portal hypertension by late Prof. A K Basu of Calcutta and late Prof. C S Sadasivam of Chennai, are quite well known. Prof. Samiran Nundy at the AIIMS popularized shunt procedures for portal hypertension.

In 1975, I entered the portals of Madras Medical College, and Surgical Gastroenterology was born at Government General Hospital. It was here that there were many firsts to my credit. The first stapler anastomosis for anterior resection using the Russian SPTU reloadable gun was done in 1979. In 1982 I delivered the Pandalai Oration on rectal carcinoma and staplers during the annual meeting of the Association of Surgeons of India at Bombay. The department also popularized the use of laparostomy in septic peritonitis.

The Ostomy Association and ostomy therapy course were first started in Tata Memorial Hospital, Bombay by Mr. Rama Kant Shah. He did pioneering work in the management of ostomy patients and started Ostomates Association. In July 1991 a course on ostomy management was started for nurses at Madras Medical College and Government General Hospital.

Prof. Sethi from Bombay, deputed by the Medical Council of India, inspected the department and recommended in 1984 that we start M.Ch. (Surgical Gastroenterology) course as a superspeciality at Madras Medical College and Government General Hospital, Chennai. For the first time in the country, in Ward 10, Government General Hospital, I started the M.Ch. (Gastroenterology) course, and thus surgical gastroenterology became an independent entity.

In the 1980s Prof. T E Udwadia pioneered laparoscopic cholecystectomy in India. Other surgeons who contributed to the advancement of surgical gastroenterology include Drs. B M L Kapur, S P Kaushik, S K Mathur, N Ananthkrishnan and Prakash Khanduri. In the initial stages, liver transplant surgery had its ups and downs; now it is well established at Apollo Indraprastha Hospital and Escort Hospital, New Delhi; Christian Medical College and Hospital, Vellore; and Lakeshore Hospital, Cochin, among others.

Other centers having postdoctoral courses in surgical gastroenterology are Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow; AIIMS, New Delhi; PGIMER, Chandigarh; Jawaharlal Institute of Postgraduate Medical Education and Research, Pondicherry; Nizam Institute of Medical Sciences, Osmania; and Sri Ramachandra Medical College and Research Institute, Chennai, with the advent of the Diplomate of the National Board course. Avenues have thus been thrown open to several talented specialists to quality and further develop the speciality.

### **Preventive gastroenterology: interesting and rewarding**

**Sharad C Shah, Subhash Agal**

Mumbai

**T**he subspeciality of “Preventive Gastroenterology” has not yet evolved in a big way in India. Most academic institutions that mention preventive gastroenterology in their

curriculum recommend only that, along with the subject of gastroenterology, prevention should be touched upon. I would like to envisage this specialty in a different way; we should try to make the subject interesting as well as rewarding by forming it in a way that appeals to clinicians.

In routine gastroenterology practice, prevention is dealt with only in the form of a few instructions passed on to an individual patient by a busy practitioner. However, since preventive gastroenterology has a definite impact on clinical outcome in the long term, such services should be given at a professional level with appropriate remuneration. We should also issue evidence-based recommendations on preventive aspects of different gastrointestinal disorders prevalent in our country.

#### *Facilities for center dedicated to preventive gastroenterology*

- Outdoor and indoor facilities
- Well-equipped laboratory with facilities to estimate viral markers, tumor markers, etc.
- Facilities for electronic data recording
- Library with access to internet
- Follow-up modules for each GI disorder
- Personnel trained for counseling
- Group activities
- Staff for collection of guidelines for prevention of GI disorders based on worldwide experiences
- Research division with personnel qualified to conduct animal and human studies on prevention of GI diseases

#### *Application of preventive gastroenterology*

1. *Avoidance of risk factors:* When a diagnosis is reached in a given patient, efforts should be made to identify the risk factors involved. Some risk factors cannot be removed but others can be avoided in order to abolish disease progression or its complications. For example, in a patient with cirrhosis of liver, it is essential to

- Treat hepatitis B and C viruses if present, so that continued insult or complications do not occur; if not present, take measures to prevent their acquisition (e.g., by vaccine)
- Vaccinate against hepatitis A, if serology tests negative.

2. *Scouting for other manifestations of dis-*

*ease:* Often, less common manifestations of a disease are not easily apparent or are inadvertently missed. It is important to know these manifestations and treat them. For example, in oral leukoplakia other mucosal surfaces (vagina, anus) should be examined. The buccal mucosa along the occlusal plane should also be inspected. Similarly, in a patient with laxative abuse, it is worthwhile to look out for anorexia nervosa, dyselectrolytemia, renal dysfunction and renal calculi.

3. *Identification of concomitant diseases:* On many occasions, associated infirmity can cause clinical catastrophe. For example, in a patient with anorectal abscess, it is desirable to look for Crohn's disease, diabetes, diverticulosis, salpingitis, sexually transmitted diseases, and HIV infection. In celiac disease, one should look for IgA deficiency, secondary lactose intolerance, avitaminosis, dermatitis herpetiformis, to avoid complications.

4. *Patient education:* Patient education is the hallmark of prevention. This will help prevent recurrence of the same illness or related illnesses. For example, in a patient with congenital megacolon, in order to stave off complications before and after surgery, it would be proper to instruct the patient about signs of dehydration (dry tongue, sunken eyes, lethargy, loss of skin turgor, diminished urine output) so that life-threatening complications can be averted, and request the nurse to teach care of the colostomy bag.

Patient education also involves imparting knowledge of the expected course of an illness so that any deviation from the expected course is brought to the notice of the physician by the patient. Patient awareness programs can be amalgamated with other educative programs targeted at the general population. They can be undertaken by regular lectures and meetings, informative handouts, advertisements in newspapers or the electronic media, talks/chats in the electronic media, web pages for net surfers, support group of people suffering from the same illness.

5. *Primary measures:* Primary education is aimed at an individual, family members or the population at large. The following means can be adapted.

- Screening tests
- Health promotion measures like exercises, hygiene, nutrition, yoga, meditation, etc.
- Vaccination
- Genetic counseling

Practice of preventive gastroenterology will need, in addition to advice, different medications, instruments and programs. Examples of medications used in preventive gastroenterology include NSAIDs for colon cancer, especially familial adenomatous polyposis, and  $\beta$  blockers for variceal bleeding. Instruments like endoscopes will be of immense use in primary and secondary prophylaxis of variceal bleeding and polypectomy for adenomas.

### Conclusions

The growth of preventive gastroenterology is long overdue. This will not only help individual patients but also save financial resources. For the growth of this subspeciality we advocate the following measures:

- Recognition by the Indian Society of Gastroenterology, other medical societies and academic institutions
- Make it a part of DM / DNB programs
- Allotment of adequate coverage to preventive gastroenterology in journals
- Establishment of task forces to provide evidence-based advice on prevention
- Conferences on the subject

## Progress of gastroenterology in India

Rakesh Tandon

Delhi

### *Development of gastroenterology world wide*

Gastroenterology (GE) has grown tremendously during the last 50 years. I have personally seen and experienced the steady improvement in the methods of diagnosing and treating gastrointestinal diseases during the growth, at least for the last 40 years. It is thrilling to see that, while in the late sixties we had to struggle to get a quick glimpse of bleeding varices using the semiflexible Eder-Hufford esophagoscope or to establish the diagnosis of gastric ulcer with the fading light of an Eder Palmer gastroscope, we can now get a clear view of the entire gut on a screen using modern videoendoscopes. We can even treat lesions like polyps and early gastric cancers and control bleeding from varices, ulcers or angiomatous malformations. Modern endoscopes allow us to cut, sew, and ligate. Transgastric intra-abdominal

surgical procedures have been done using a gastroduodenoscope.

Our understanding of the etiology and pathogenesis of diseases has also improved substantially, and that has impacted positively on treatment and outcome. Peptic ulcer disease is treated now by eradicating *Helicobacter pylori* rather than with loads of antacids and milk drip. Variceal hemorrhage is controlled by sclerotherapy or band ligation rather than by futile efforts with balloon tamponade or by resorting to risky surgery. Effective intervention with nucleoside analogues and interferons is possible now in chronic hepatitis B or C rather than watching these patients progress helplessly to cirrhosis. Patients with terminal liver disease can be salvaged and can hope to live a near-normal life with liver transplantation.

### *Gastroenterology in India*

Gastroenterology as a speciality took off late in India. I distinctly remember that in the mid-sixties, when I was doing my postgraduation in Medicine, the only trace of the speciality seen in the Department of Medicine at my medical school was by way of an England-trained pool officer who would do occasional rigid sigmoidoscopies and give consultations for patients with persistent diarrhea or recurrent abdominal pain (likely, irritable bowel syndrome). No one thought of going abroad to train in the speciality of gastroenterology. The only specialities students were rushing to get trained in were cardiology and neurology.

The scenario changed gradually after the early '70s, more because of saturation in cardiology and neurology rather than any attraction to gastroenterology. However, from the late '70s onwards, gastroenterology started attracting students in its own right, mainly because of the improved vision and maneuverability of the endoscopes and the availability of newer imaging techniques like ultrasonography, computerized tomography and magnetic resonance imaging.

The start of the Indian Society of Gastroenterology (ISG) in 1958 certainly helped in popularizing the speciality and in disseminating knowledge of gastroenterology through its annual conferences and midterm meetings (symposia). The official journal of the society, *Indian Journal of Gastroenterology* (IJG), helped further in achieving this educational goal as also in inciting interest among young investigators to do clinical research in the fields of gastroenterology and hepatology. Over the years the research presenta-

tions at the annual conferences of ISG as well as the articles published in IJG have shown a remarkable improvement – a clear indication of the appearance of serious research in India. In particular, an increasing percentage of basic sciences and molecular biology is seen in these presentations. Recent introduction of task forces by the ISG should generate useful baseline information regarding the epidemiology and clinical features of common gastrointestinal disorders in India.

At present, most tertiary-care hospitals in major cities in India, whether in the government or private sector, have a gastroenterology set-up equipped with the latest videoendoscopes and trained gastroenterologists. The facilities, however, are still far too short of the requirement on the national scene.

### *Challenges in India*

Two major challenges facing the development of gastroenterology in India are the acute shortage of trained gastroenterologists and the huge disease load comprising a variety of diseases ranging from parasitic infections to Crohn's disease.

*Shortage of trained personnel:* A rough estimate of the number of trained gastroenterologists in India today is about 500. The World Organization of Gastroenterology (OMGE) recommends that there should be one gastroenterologist for every 50,000 population. Even if we recommend one gastroenterologist for 100,000 persons, the total number of gastroenterologists required for our one billion people today would be 10,000. Thus, we have a shortfall of about 9500 gastroenterologists in this country today and this number is bound to increase with an ever-increasing population. With only 12 medical schools providing DM training in gastroenterology, and each center passing out 3-4 trained gastroenterologists per year, only about 50 gastroenterologists get added every year. At this rate, it will take a very long time to fill up the gap. Hence, the only solution lies in creating more training centers, and that can best be done by starting a nucleus of gastroenterology within the department of Medicine in each existing medical college. All it requires is the addition of one trained gastroenterologist to the faculty of Medicine and some basic endoscopic equipment and laboratory support. That nucleus will likely expand to a full-fledged department of gastroenterology in a couple of years and will start postgraduate training in the speciality.

Another potential source of gastroenterologists is the large pool of non-resident Indians settled in USA, England and Australia. Some of them could possibly be attracted to come back to their motherland and serve their countrymen, by giving them comparable work environment and facilities as well as decent remuneration. I believe all these are possible, and a reverse 'brain drain' is on the anvil, thanks to the recent upsurge in the economic status of the country.

*Disease burden:* Seventy percent of the Indian population live in rural areas where poverty, poor sanitation, and lack of education prevail. Thus, malnutrition is still rampant. It is estimated that half of all children in India are malnourished. Indeed, it is the major cause of death among Indian children, with 2.5 million annual deaths, which accounts for one of every five child-deaths worldwide. Even in cities, half the population lives below the poverty line and is exposed regularly to poor hygiene and multiple infections. The evil alliance of malnutrition and infection results in acute gastroenteritis, diarrhea, malabsorption and post-infectious irritable bowel in millions of children and adults. Acute and chronic hepatitis remain extremely common and constitute a major cause of absention from work as well as of long-term suffering from end-stage liver disease requiring liver transplantation. Tuberculosis and amebic infections still afflict the gut and liver quite commonly. HIV is well entrenched in India, having already affected 5 million persons, and is likely to explode soon into a major epidemic.

On the other hand, the recent acquisition of affluence and a rapid change in lifestyles, particularly in young executives, technocrats and professionals, have brought into India a new set of diseases. They include metabolic syndrome, gastroesophageal reflux disease, inflammatory bowel diseases, diverticular disease of the colon, Crohn's disease and colorectal cancer. Excessive consumption of alcohol has led to an increased incidence of liver and pancreatic diseases.

As a result, India faces a double burden of diseases – malnutrition and infection on one hand and chronic diseases like coronary artery disease, diabetes mellitus, obesity, and alcoholic liver diseases on the other. The WHO estimates that 60 million Indians will die from chronic diseases by 2015, and with this India would lose during this period approximately US\$237 billion in national income. China is similarly projected to lose US\$

558 billion due to chronic diseases over the same period.<sup>1</sup>

Gastroenterologists in India thus have to be knowledgeable not only in the usual gastrointestinal disorders but also in tropical infections and diarrheal diseases.

*Special problems in India and other developing countries:* It is paradoxical that the tropical diseases that affect the large populations of developing countries often receive less attention and research support. Many reasons account for this. Some of them are lack of expertise and facilities, lack of interest by the developed Western world in the problems of the poor countries, difficulty in publishing research related to tropical diseases because it is usually not very glamorous and, finally, because the pharmaceutical industry does not view inputs in those areas as very rewarding in terms of return of their investments. Research in tropical diseases will have to be done thus by investigators in developing countries only.

#### *Ethical issues*

The three basic tenets of ethics – respect for persons, beneficence, and justice – are widely accepted in society and apply to all fields of Medicine, but are particularly relevant to a speciality like Gastroenterology which entails several invasive procedures including endoscopy. Respect for persons implies a respect for autonomy. Unfortunately, doctors in India often behave as demigods and make sensitive decisions themselves for the patients without involving them in the decision-making. That attitude must be discouraged. It is extremely important to explain to the patient and close relatives the benefits expected and the risks involved in the procedure before it is undertaken. That should be accompanied by an informed consent in writing. There are some covert ethical issues peculiar to gastrointestinal endoscopy.

Beneficence means an obligation to improve patients' well-being without causing them any harm. How do you assess the skills, competence and rational judgement of the endoscopist?

Justice applies to the obligation to treat everyone in accordance with what is 'right and proper'. It is often difficult to draw a clear line between professional competence and the safety of a procedure on one hand, and ethical behavior on the other.

Minimally invasive and remotely controlled devices are clearly on the horizon. Capsule endo-

scopy is just the beginning. I am sure within a couple of years some therapeutic capability will be introduced in it. Robots are already being used for performing surgeries and I do not see why they would not be used soon for performing endoscopies. It is conceivable that by the end of the century, the patient may go to a clinic manned only by robots and will get himself / herself checked and treated just as a car gets an auto wash. The human touch will, however, be lost in that scheme. I hope the medical fraternity will not let things go so far and will keep the human touch for their patients. Also, it is important that the final decision regarding the therapeutic intervention to be done remains with the clinician and not be relegated to machines and computers. No technology can replace clinical sense and judgement.

Use of sophisticated technology and newer expensive drugs (partly because of the large investments in research and development) has increased tremendously the cost of medical care. That affects predominantly the poor and deprived sections of the population. While the rich can still manage it, the poor cannot afford to get such expensive therapies. The money power of the rich often utilizes a larger proportion of the limited facilities and expertise, leaving very little for the suffering and needy poor patients. This problem has to be dealt with at several levels. Firstly, the physicians should use diagnostic facilities judiciously and not get coerced into doing a test simply because the patient desires it. That applies particularly for government hospitals. Government and philanthropic societies should come up with more free or low-cost hospitals. Thirdly, a better governmental control over the pricing of drugs and equipment is required so that overpricing is checked.

Pharmaceutical companies and equipment makers are both presently taking advantage of the poor pricing policies of the government. They often take advantage of their expertise or copyright and fix a high price for their products. I believe the Indian Society of Gastroenterology should take an active part in it by volunteering assistance to the Drugs Controller and other regulatory bodies so that a rational price be fixed for each item. This is our duty and an obligation to society.

Medical education in India has become very expensive. This places an extra financial strain on the students and their parents. The result is often a change in the attitude of the medical graduate.

He or she might be motivated to earn back fast the large sum of money his / her family has invested. That could possibly set up a very unhealthy trend, compromise greatly the code of medical ethics, and deviate the medical practitioner away from the advice given by Charaka in his treatise: "He who practices not for the money nor for caprice, but out of compassion for the living beings, is best among all physicians. The physicians who set out to sell their skill like merchandise only lose sight of the gold and acquire heaps of dirt. Hard is to find a conferrer of spiritual blessings comparable to the physician who snaps the snares of death for his patients and proffers renewed lease of life for them. The physician who regards compassion for living beings as his highest religion fulfils his mission in life and obtains the highest happiness" (quoted by Ramchandra Rao<sup>2</sup>).

#### Summary

Rapid and remarkable progress has occurred in the field of gastroenterology during the last 50 years. That has increased tremendously our diagnostic and therapeutic capabilities but has also made treatment more expensive than before. It becomes obligatory for us therefore to use the facilities judiciously and maximize benefits from them. Several ethical issues arise; one of them is to ensure that money power is not allowed to

misuse the limited facilities available. This is all the more important in a developing country like India. There are additional problems that the gastroenterologist in India has to deal with. He has to often rely only on his clinical judgement as sophisticated technology may not be locally available. He has to perhaps deal with a much larger spectrum of gastrointestinal diseases than his counterpart in the Western world. This is because while malnutrition and infections continue to thrive, many new diseases associated with affluence seen traditionally in the West have also appeared in India. In addition, the gastroenterologist / physician in India must address the multiple but relevant societal issues such as price control of drugs and equipment, keeping medical education affordable, and treating patients with compassion and personal touch. Only then can he practice with 'conscience and dignity and maintain the honour and noble tradition of his profession' (World Medical Assembly at Geneva, 1948; quoted by Ramchandra Rao<sup>2</sup>).

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