Glimpses of ancient Indian medicine—Part II*

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Medical knowledge in Ayurveda

The *Atharva Veda* did not mention *nidanas* or the causation of diseases even when it referred to wind, water, fire, worms, sorcery and demons as capable of causing harm. Charaka offered a detailed classification on the basis of physical, accidental and mental causes. Sushruta's approach to aetiology was even more systematic and his broad categories of causes were the traumatic, the physical, the mental and the degenerative, with several subcategories that encompassed the entire spectrum of ailments[1]. Charaka postulated three essential components for a disease, namely *nidanas* or predisposing causes which disturb the *doshas*, *doshas* or the vitiators, and *dhatus* or the vitiated. When *vata*, *pitta* and *kapha* are acted upon by *nidanas*, many permutations and combinations of excess and deficiency of *doshas* could occur and each disturbed condition could produce symptoms and disorder. While Sushruta detailed five stages through which disharmony of *doshas* manifests as disorder, Charaka adhered to his general view that disease results only when *nidanas*, *doshas* and *dhatus* come into particular combinations. Sushruta did not explain why excited *doshas* took abode in a *dhatu*, but Charaka believed that the localization was not accidental and that the 'proneness' of the *dhatu* did play a role in the process. Charaka also propounded the view that *srotas* or ducts are ubiquitous in the body for the flow of vital substances and forces and, in so far as they remain in the normal state, the body cannot be affected by disease. This view influenced his approach to pathogenesis. His explanation for insanity is illustrative: 'The wind being disturbed and the understanding deranged, the *doshas* are aggravated; then reaching the heart and obstructing the ducts through which the mind operates, they beget insanity.'[2]

Ayurveda prized clinical diagnosis. Charaka declared, 'The physician of knowledge who fails to enter the inner body of the patient with the lamp of knowledge and understanding can never treat diseases'[3]. In 'clerking' the patient, careful history was elicited regarding his home and background, ability to work, and the onset of symptoms before proceeding to a complete physical examination for which elaborate measurements were provided for different parts of the body. Counting the pulse did not form part of the examination, even though inspection, palpation and direct auscultation were regularly employed. Even taste and smell were pressed into use for diagnostic purposes. In addition to these steps, a physician was obliged to examine the patient by the 'test of his essence' (*sara*) which referred, in fact, to the body, mind, semen, marrow, bones, fat, muscle, blood and skin. Distinguishable attributes for each of the *saras* were given in detail. The findings of the examination were analysed by the physician in the light of wise teaching and by the process of inference to identify the nature and stage of *dhatu vaishamya*. Diseases as we know them were not recognized and diagnosis referred to a symptom complex which took another identity upon the slightest change in its appearance or evolution. The complication of a disease often became another disease in Indian texts, which stated that 'one disease may be the cause of many or one, or many may be the cause of one, or many may be the cause of many'[4]. The distinction between cause and effect among different diseases was often blurred in the ancient tradition.

The art of prognosis received great attention because the minds of men were beset with the extreme instability of life and the ever-present spectre of epidemics. Ancient Indian physicians recognized that the patient was not so much concerned with what was wrong with him as with the question of what would happen to him. Physiognomy, symptoms, omens and dreams of patients were synthesized to form an elaborate system of reference for prognostication, which revealed as much clinical perception as elements of poetic imagination and superstition.

The aim of treatment in *Ayurveda* was to restore the balance of *dhatus* or *dhatu samya* through diet, medications and change in life-style. As the cure of diseases was admittedly difficult, great emphasis was laid on the protection of health. Charaka advised that 'one endowed with intelligence and desirous of maintaining health should bestow great care upon everything connected with food, deportment and practices'[5]. A daily regimen consisting of the care of mouth, evacuation, bath, care of hair, beard, nails (to be pared every five days) and other fine details was prescribed; two balanced meals a day with vegetarian as well as non-vegetarian items were recommended; exercise, gymnastics, frequency of sexual intercourse, clean clothes, wearing of head-dress and shoes and other healthful habits were advised. The regimen would undergo modification with the change of seasons and the constitution of individuals.

Mind and body were inseparable provinces in *Ayurveda*. While medicines repaired the body, right knowledge, self-control and self-concentration alone were the correctives for the mind. Control of impulses, avoidance of harsh speech, nonviolence, shunning bad company, and above all, a life according to *dharma*, were strongly enjoined for healthy and happy living.

Charaka and Sushruta gave detailed classifications of curable and incurable conditions as guides to the physician in accepting or not accepting patients for treatment. Four elements in the success of treatment were the physician, the patient, medicines and the patient's attendant; each was characterized. Treatment was to start as soon as the diagnosis was made because diseases dug deeper with time and lack of treatment. The physician was obliged to treat curable diseases with medicines and regimen that possessed virtue opposed to the cause of the disease. Charaka explained: 'We treat patients suffering from particular diseases with medicines possessed of virtues opposed to their symptoms. A lean and weak man is strengthened; a corpulent and fatty person we reduce to proper size; one whose system is warm, we treat with drugs that are cooling. . . . In fact, by treating diseases with medicines endowed with

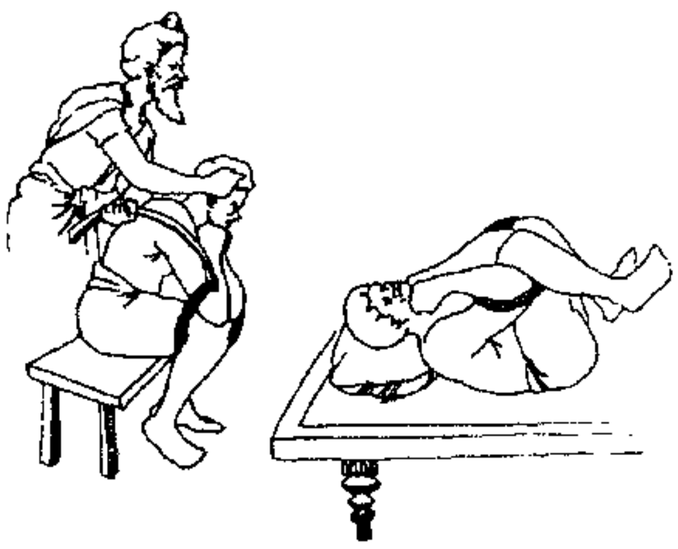
* The first part of the article appeared in the previous issue.

virtues opposed to their originating causes, we succeed in fully restoring the patients to their normal condition.'[6]

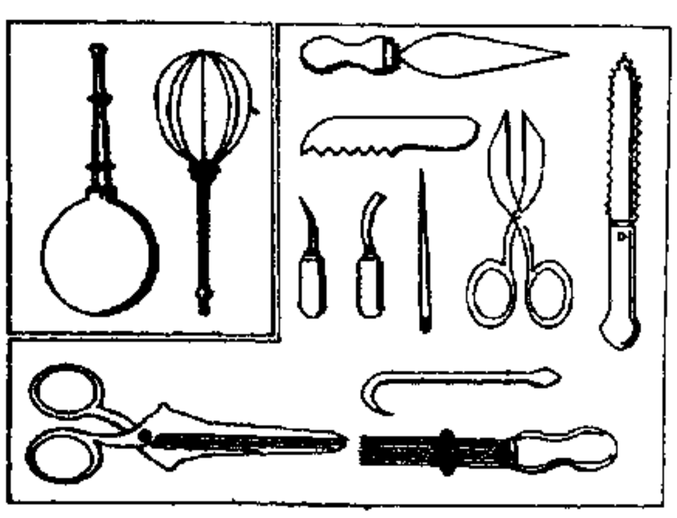
Apart from six physical procedures, including emesis, medicated enemas, bloodletting and diaphoresis, treatment laid great stress on materia medica, which consisted of vegetable, animal and mineral products. These products were described in detail and their mode of action on the body analysed with considerable subtlety. Opium and mercury however did not figure in the formulary until many centuries later. Sushruta divided medicines into two classes — those which rectified the deranged state of *doshas* without excreting them, and a second category which caused the elimination of accumulated *doshas* by purgation and emesis. He described 400 drugs under 37 groups according to the diseases for which they were to be used. Tonics (*rasayana*) and rejuvenators (*vajikarana*) also found a place in the materia medica, which gave detailed instructions on the preparation of medications in 23 forms, including powders, paste, decoctions, ointment and pills.

Pharmacologic theory claimed that medical substances (*dravya*) possessed quality (*guna*) and action (*karma*), which were inseparable for practical purposes. *Gunas* were sensible qualities, such as cold/hot, fluid/viscous, heavy/light, rough/smooth and so on, whereas *karma* was determined by the potency (*virya*) of the substance and the time and place of action. As the aim of management was the restoration of the *dhatus* of the body to their normal state, diet and medications were employed to act on the *doshas* through their triune combination of substance, *gunas* and *karma*. The guiding maxim was that substances having similar constituents or qualities would decrease each other whereas those having dissimilar constituents or qualities would increase each other. As a guide to medical therapy, all materials used in treatment were classified and presented according to their qualities and their interaction with the *doshas*. For example, sweet, acid or saline tastes decreased *vayu*, but sweet, bitter and astringent qualities decreased *pitta*. The ancient materia medica represented a massive effort that spared no aspect of pharmacology.

Ayurveda accorded a high place to surgery, which was not obliged to graduate from a lowly craft in the Indian tradition. Sushruta's name is synonymous with the high-water mark in India's surgical history. Surgeons learnt much regional anatomy as *marmas* from surgical dissections. The 107 *marmas* which were said to mark the meeting point of five structures—ligaments, blood vessels, muscles, bones and joints—in various parts of the body were danger spots where the surgeon's incision could cause major harm. This is readily borne out by the specific dangers that are stated to be associated with damage to various *marmas*. Sushruta gave elaborate instructions regarding the preoperative preparation of patients, the surgical procedure from incision to closure and postoperative care. The procedures included the reduction of fractures, removal of foreign bodies, cataract removal, paracentesis, excision of tumours and fistula-in-ano, cystolithotomy, otoplasty, rhinoplasty, cauterization and many others. He also described 101 blunt instruments and 20 sharp instruments and the methods for their use. Contraindications for operations were given, such as, for example, ophthalmoplegia, glaucoma, corneal ulcers, etc. in the field of ophthalmology. The advanced state of surgery in Sushruta's India is independently attested by Buddhistic texts such as *Mahavagga*, which refer in detail to the legendary skill of Jivaka who did craniotomy and other procedures, including an operation for anal fistula on King Bimbisara.



Positions described by Sushruta for venesection and cystolithotomy.



An assortment of Sushruta's instruments.

Training and ethics

In ancient India, a physician received his training through apprenticeship to a guru or by enrolling himself in a centre of learning. The outstanding centres of medical learning were at Taxila and Kasi, which attracted students from many countries. The academic excellence and residential nature of Taxila, in particular, had won the praise of Pliny and Strabo.

According to Charaka, a medical teacher had to be sound in the knowledge of texts, and thoroughly familiar with the nature of health and disease, of drugs, of seasons, of places and of men; he should have had long experience in medical practice and a skilful hand; his knowledge was not to be confined to medicine and he had to have a broad understanding of other branches of knowledge; he had to be lucid in communication; he had to be free of malice towards anyone and had to have goodwill for all; he had to show compassion towards anyone who sought his help. The qualifications for the teacher were matched by those for the candidate, who was required to possess patience, politeness, purity of mind and body, truthfulness, nonviolence, celibacy and the determination to acquire knowledge. The prescribed age for admission was sixteen years and the trainee was expected to have proficiency in Sanskrit literature, *Upanishads*, *Smritis*, history, geography, philosophy, astronomy, astrology, arithmetic, geometry and algebra. The universities selected their students after an interview by a committee of *dwara pandithas*. The commencement of training was a solemn ceremony which bound the teacher and the taught in a sacred contract.

The student's life was hard. Waking up before dawn, he cleaned himself and offered prayers before being asked to repeat the lesson of the previous day, and taught a quarter, half or full stanza from the text, which had to be committed to memory. The teacher made sure that the student understood the meaning of the text; learning by rote without understanding the meaning was no different from 'an ass carrying a load of sandal wood'[7]. The training included practice, which covered examination of patients, preparation of medicines, and surgical operations. Surgical procedures were taught on dummies, incisions on watermelon or cucumber, tapping in water-filled pouches or leather bags, venesections in the veins of dead animals, extraction on the teeth of dead animals, suturing on pieces of cloth or leather, and bandaging on

wooden models. The equal importance of theory and practice was recognized by Sushruta, who believed that experts in only one branch 'are like one-winged birds'[8].

The training lasted seven years, and a theoretical and practical examination followed. The '*Salaka* test' in theory required the candidate to explain before an audience a page from a manuscript which had been marked by a rod. Practical tests were not confined to the classroom: Jivaka, for example, was asked by his *guru* to go around Taxila and bring back a plant that had no medicinal value. The degree was awarded at a ceremony known as *samavartana*, when the student had to take an elaborate oath[9]. The graduated physician had to seek the formal permission of the king before opening his practice. Quacks existed and ran great risks, as we find from the *Arthasastra*. Charaka denounced them and referred to 'cheats who wander about on the streets boasting in the garb of physicians. . . they should be shunned for they are the messengers of death on earth'[10].

Essentially medical practice was enjoined as a service to fellow men. A medical teacher was likened to a mango tree that gave away all its fruits to others and retained none for itself. However, the physician was not barred from charging a fee from patients other than Brahmins, the poor, the sage and the helpless. The practice of medicine not only gave one religious merit but also wealth and pleasure.

Conclusion

Ayurveda is a child of the cultural past of India. From Vedic times, countless men laboured in the vineyard of medicine by distributing amulets, dispensing herbs, removing foreign bodies and speculating on the mysteries of health and disease. Ministration to the sick would give them alternate moments of delight, anguish and triumph and advance the corpus of medical knowledge by imperceptible degrees. From time to time one practitioner might stumble upon a scrap of information or improve an existing procedure to open a bit of the unknown until the minuscule achievements would cumulate in the mighty flowering of genius in a Sushruta or a Charaka. They were products of time in as much as they could not have appeared a thousand years earlier in the Vedic times. 'When kings build castles, wagoners get busy in their hundreds' for carting materials. Great scientific events are followed in like manner by the effort of hundreds of scientific labourers. This allegory describes the development of Indian medicine over a thousand years following Sushruta — from 600 BC to 400 AD — when it advanced on many fronts. At the intellectual level, the rooting of *Ayurveda* on the philosophic bedrock of *Nyaya-Vaiseshika*, the evolution of the *tridosha* doctrine, the synthesis of past traditions, and the development of systematic classifications are illustrative of the Indian penchant for abstract thinking and the creation of order out of chaos. Nor are the corresponding achievements in anatomy, physiology and pharmacology less remarkable or less original than those of contemporaneous civilizations in the world. In terms of practical achievement, the survival, in spite of the neglect of a thousand years, of the elaborate system of diagnosis and treatment cannot but vindicate the quintessential validity of *Ayurveda*. Above all, the Indian heritage in medicine upheld its holistic nature and the pre-eminence of compassion at all times. For all these achievements, Indian medicine fell a victim to two maladies that were insidious in onset and crippling in their sequelae. In the first place, the Indian tendency of not defining the limits of tolerance cast its mantle on the growth of *Ayurveda*, with the result that illogical and even fantastic ideas and procedures were entertained side by side with profound analysis and advanced techniques in the growing corpus of knowledge. Many examples from the great *Samhitas* bear testimony to this paradox, which ensured stagnation at best or decline at worst by the illogical diluting, or driving out, the logical. Secondly, a new kind of insularity crept into Indian medical thought from the early centuries of the present era and deprived it of the intellectual nourishment that comes from interaction with knowledge from other lands. This was a major retreat from the position of Charaka, who had declared that the entire world is a teacher for the wise. A tragic consequence of this insularity was the failure of Indian medicine to absorb the philosophy and methodology of experimentation which revolutionized Western medicine in the seventeenth and eighteenth centuries.

The problems that assailed and handicapped Indian medicine are deep-rooted but not insoluble. There are signs of renewal in the country and medical wagoners are busy doing their laborious bit to build the new edifice that will incorporate the best from East and West and carry on the glorious trail blazed by Sushruta and Charaka long ago.

1. *Sushruta Samhita*, I, 1.
2. *Charaka Samhita*, quoted by P. Kutumbiah, *Indian J. Hist. Med.*, 1957, II, no. 1, pp. 13–20.
3. *Charaka Samhita*, III, 4, 13 & 15.
4. *Charaka Samhita*, II, 8. 16–40.
5. *Charaka Samhita*, I, 7. 43, 55.
6. *Charaka Samhita*, I, 10. 7.
7. *Sushruta Samhita*, I, 4.
8. *Sushruta Samhita*, 3. 48–50
9. *Charaka Samhita*, 3. 8. 13.
10. *Charaka Samhita*, I, 29. 10–11.

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