Glimpses of ancient Indian medicine—Part I

M. S. Valiathan

Origins

Folk medicine is the mother of all systems of medicine. In the Indian palimpsest, folk medicine was never fully erased before the newer texts of local or foreign origin were written. Millions of tribals continue to depend on the folk practitioner who seldom recognizes a flaw in his system. Folk medicine claims that diseases are caused by evil spirits or the wrath of gods; it recommends diagnosis by divination and treatment by propitiation. In tribal India, one may still see and baths of the ancient Indus valley cities of Mohenjodaro and Harappa. If Ayurveda continues to serve millions after centuries of neglect and stagnation, it could only have done so by drawing the power for survival from traditions that reach back to prehistoric times.

The Harappan culture which flourished around 2500 BC faded away, leaving behind relics of enigmatic glory. By 1500 BC, the Vedic age heralded a joyous search which spared neither spiritual nor secular phenomena. The earliest historical references to medicine date back to the Atharva Veda, which contains mystical, magical and rational elements in varying proportions. Diseases were regarded as the punishment of gods for sin and transgressions and the punishment accorded was intensely visual. For example, Varuna (lord of the waters) inflicted dropsy, Puranjya (rain god) decreed diarrhoea, and Agni (fire god) ordered fever. Other diseases were looked upon as manifestations of supernatural powers that surrounded men as pishacas, rakshasas and other demonic species. The Atharva Veda described symptoms and signs such as fever, diarrhoea, cough, seizures, tumour and ulcers but did not specifically deal with diseases. The Atharvaveda approach to treatment consisted of propitiatory rites (swastayu), offerings (pujya), auspicious oblations (mangala homa), penance (niyana), purificatory rites (prayachchita), fasting (apavasa) and incantations (mantra). Many a hymn implored demons and caemaries, while others sought the blessing of health. Here is a hymn addressed to Varuna for the treatment of a patient with dropsy:

The golden chamber, King Varuna,
Is built in the waters
There the King that maintains the laws
Shall loom all shackles.

From every habitation, O King Varuna,
From here do thou free us; if, O waters,
inviolate oaks, we said.
Free this sin, O Varuna, free us!

Loosen from us, O Varuna, all fetters, 
the uppermost, the next, and those 
imposed by Varuna! Evil dreams and 
misfortunes drive away from us; then 
we may go to the world of the pious.

Incantations were supplemented 
by amulets and magic; the wizard 
appeared larger than gods. The Atharva 
Veda declared that 'there are hun-
dreds of medical practitioners and 
thousands of herbs, but what can be 
done by these can be effected by 
binding an amulet'. In the forest of 
magic trees, one is also greeted by 
rational stretches such as the descrip-
tion of 'the wonderful structure of 
man' which contains much good 
anatomy, prescriptions for dietary 
regimen, and medications such as 
guggul and satavari. Medical proce-
dures in vogue included probing of 
the urethra for retention of urine, 
emna application of leeches, and 
thermal cauterization of snake bites. 
Mantras were mandatory accompa-
niments for most of these procedures. 
Dagusha believes that the tirdosha 
concept, which forms the corner 
stone of Ayurveda, was foresha-
adowed by the Atharvan classification 
of disease into those produced by 
water, wind and fire. It would appear 
that there were two classes of phy-
sicans who practised medicine in 
the Vedic period. The Atharvans 
were priest-physicians who had access 
to the king, prescribed charms besides 
herbs, and stood higher in the medi-
cal hierarchy; they were outnumbered 
by ordinary physicians or vaidyas, 
who dealt with mundane remedies 
such as herbs and manual procedures. 
The medicine of the Atharva Veda 
was no less advanced than the sys-
tems that flourished in contempor-
aneous civilizations in Mesopotamia, 
Egypt and Crete. It laid the founda-
tions for the development of Indian 
medicine and forged a tenuous link 
between our Harappan inheritance in 
public health and the subsequent evo-
10


cine. In the treatment of the philo-

sophic background of medicine and 
its interrelations with religious 
thought, the Charaka Samhita excels 
other ancient texts and marks the cul-
mination of the creative phase in 
Indian medicine. No wonder that 
Sushruta and Charaka, and Vagbhata, 
who followed them a few centuries 
later, are affectionately known as the 
vrdhahtryayi (the three ancients) of 
Ayurveda even today. The period of 
The Samhitas may rightly be regarded 
as the golden age of Ayurveda.

But the Sushruta Samhita and 
Charaka Samhita of today are pro-
ducts of evolution in so far as they are 
later editions of much older texts. 
Charaka composed his Samhita on the 
basis of the Tantras of the six disci-

ciples of Atreya, all of which are lost 
but were extant in the first few centu-
ries of the Christian era according 
to the evidence in the Bower manu-
script. Similarly the Sushruta Sam-
hita was written and expanded by 
Nagarjuna in the early years of the 
Christian era from the original Salva 
tantra of Sushruta who lived eight 
centuries earlier. In editing older 
texts, Charaka and Nagarjuna re-
garded them as national libraries of 
medicine to which they added their 
own treatises. The great Samhitas 
atained their present form in the hands 
of Charaka and Nagarjuna in the first 
one or two centuries of the Christian 
era. Charaka is believed to have been 
the physician of King Kanishka.

The Samhitas of Charaka and 
Sushruta stood in isolated splendour 
until Vagbhata Senior wrote a mas-
terly compendium to harmonize the 
conflicting views that had grown over 
centuries. According to prevailing 
custom he added much independent 
material to his Astanga Samgraha, 
which had become something of a 
national favourite by the time of 
T'ying who visited India in the sev-
enth century AD. In the following 
century, Madhavacharya extended the 
art of diagnosis and produced a 
classic, Madhava Nidana, which 
dealt with the diagnosis and pathol-
ogy of diseases exclusively. Lucid 
and practical, Madhavacharya's sys-
tem marked an advance on Charaka 
and Sushruta in deepening the under-
standing of diagnosis. The eighth 

...
Vagbhata Junior, who literally condensed all that was known in Ayurveda and produced a masterpiece which continues to be a living text for the Ayurvedic physician. After Vagbhata Junior, the flow of creativity already slowed down from the early centuries of the present era, ceased altogether. Commentaries continued to appear, such as those of Chakrapanidatta, but the creative phase in Indian medicine was over.

When European observers came to India a thousand years later in the eighteenth and nineteenth centuries, they took careful note of the practice of medicine in India and sent detailed reports to the Royal Society and the Royal College of Physicians. They are valuable source material for the student who wishes to know the status of medical practice in India following a thousand years of stagnation after Vagbhata Junior. The eighteenth century reports of observers such as Holwell, Scott and others are important because these were competent observers who wrote before India was subjugated and Indians were regarded as a conquered race. No matter that the reports concern the ancient Indian procedures of variolation, cysterolithotomy, catarract removal or rhinoplasty; their canvas displays no more than islands of excellence in a sea of faded elegance.

Profiles of Ayurveda

It is far from easy to portray a medical system that took birth in the mists of antiquity, sparkled as it grew, slowed down mysteriously for a thousand years, but continues to live and serve millions in the present day. Philosophic, scientific, clinical, and ethical dimensions stand out as the main elements of its many-splendoured character.

Philosophic aspects of Ayurveda

The philosophic roots of Ayurveda are to be found in the Nyaya-Vaiseshika and Samkhya systems even though their degree of influence on Charaka, Sushruta and other authorities is not uniform. Nyaya-Vaiseshika, in particular, had considerable impact on the development of Ayurvedic thought in so far as it accepts the reality of the external world, which is known through, but not dependent on, the mind. It depends solely on experience and reason and does not attempt to reduce the diversity of experience to any universal principle. According to Sushruta, the science of medicine does not lay down that souls (atma-jivatva) are all-pervading, but, on the contrary, it asserts that they are real and eternal and are born in the planes of divine, human or animal existence. It postulates six original categories of which all things in the world are made of. They are dhatu, gunas, karma, samanya, visesha and samavaya. Charaka accepts these categories but often differs from the Nyaya-Vaisheshika concept in the sense in which the terms are employed. For example, samanya in the Vaiseshika system signifies a class concept whereas Charaka means it to include concrete things that have similar characteristics. Similarly visesha in Vaiseshika implies ultimate specific properties differentiating one atom from another, but it means concrete things that have opposite constituents in Charaka. In the samanya and visesha concepts, which have decisive influence on Ayurveda, Charaka does not hesitate to differ from the Vaiseshika system.

If Ayurveda is indebted to the Vaiseshika system for its metaphysics, it draws upon Nyaya for its logic and dialectics. In regard to diagnosis, Charaka postulates three means for establishing it. These are instructions of the wise (lapopadesa), perception (pratyaksha) and inference (anumana). Charaka believed that all three should be employed either jointly or separately for determining the nature and prognosis of diseases. Charaka and other masters also assigned a high place to logic in promoting debates, which he termed samkhya. Whether the debates were friendly (sandhyaya) or hostile (vighnya), Charaka held that they increased the zest for knowledge, clarified understanding, increased the power of speech, removed doubts, and strengthened convictions. Indeed, Charaka Samhita seems to be a distillate of many such learned discussions which had taken place under Atreyya’s chairmanship. Debates and logical disputation had been in vogue in India from ancient times but they seem to have been practised with special zeal by physicians not only to refine their knowledge but also for the less lofty purpose of defeating their opponents!

Science in Ayurveda

Ancient Indian anatomy and the tri-dosha doctrine are examples that illustrate the scientific underpinning of Ayurveda. Other aspects, including ancient Indian physiology, are no less important. Indian anatomical traditions reach back to the Rig Veda, which mentions the lungs, heart, stomach, kidneys and other viscera. In the Atharva Veda the hymn on ‘the wonderful structure of man’ enumerates several parts of the human skeleton which agree with the version of Charaka. Ancient anatomical knowledge received a boost from the dissection of cadavers, which was already practised in the time of Sushruta, who admonished, ‘Anyone who wishes to acquire a thorough knowledge of anatomy must prepare a dead body and carefully observe and examine all its different parts’. But the curious practice of dissecting a cadaver decomposing in water weakened knowledge of soft parts, unlike the reasonably correct observations on osteology. The knowledge gained from dissection was acknowledged to be imperfect because Sushruta enjoined its supplementation by observations made during surgery. Both Charaka and Sushruta devoted entire sections to anatomy, which included embryology.

What was the ancient embryology like? The embryo results from fertilization to which both male and female members contribute seed and into which the soul enters through the vehicle of the mind. Just as gold or copper assumes the form of any mould in which it is poured, causal elements enter the human mould to take birth in human shape. A jelly-like structure in the first month, the human foetus becomes hard in the second month, and shows five prominences and the rudiments of limbs in the third. In the fourth month limb differentiation is more advanced, the heart appears and offers itself as the seat of consciousness, which becomes more alert in the fifth month. In the sixth month intelligence begins
to develop, and the seventh is marked by completion of limb development. Parthenogenesis takes place as a rule in the ninth or tenth month. While this sequence generally accords with the descriptions of Charaka and Sushruta, there were other views on organogenesis and the rate of differentiation, indicating the lively nature of the debate on embryology. In fact, much of Garbha Upnishad, of unknown authorship, deals with embryology. Sushruta comments, just as the juicy parts and the stone, which are undifferentiated in green mango in its early stages, are found clearly developed and differentiated when it is ripe so, when the human foetus is uniform in the early stages of development; all its undifferentiated parts are already developing there pari passu, though on account of the fineness of their structure and growth they cannot be distinguished. According to Indian anatomists, the growth of the embryo took place by a process of stratification in which several layers were superimposed one upon another. Apart from seven layers of the skin, there were also seven other layers which separated organs and tissues, all derived from the dhatus. The derivations, often fanciful, were given in considerable detail.

In anatomy, osteology excelled, thanks to the dissection of cadavers. The osteology of Charaka and Sushruta differs in important respects from current knowledge. Sushruta begins by saying, 'The professors in general speak of 360 bones; but books on surgical sciences know only 300. Sushruta, in common with other Indian anatomists, divided the body into six parts—two extremities, the head and neck, and the trunk. Whereas the number of bones as known today is 206, Sushruta's total was 360 because he included teeth, nails and cartilages in the count and regarded processes or protuberances as separate bones (see table). Another cause for inaccuracy was the counting of aggregate structures such as carpus and tarsus as single bones. In the four extremities the present day total of bones is 120, against 106 of Sushruta; in the trunk the figures are 50 and 128, the difference being accounted for by the Indian practice of counting costal cartilages, tubercles and transverse processes of vertebrae which articulated with ribs as parts of ribs. Similarly the bones in the head and neck total 30 whereas Sushruta's figure is 66 because he included trachea and bronchi, teeth and dental sockets in his count. Apart from enumeration, Sushruta also classified bones into five types—flat, sharp, tender, circular and seed-shaped. He fully realized the role of the skeletal system and commented: 'As trees are supported by the hard core inside their trunks, so the body is supported by the firm bones. Muscles are attached strongly to the bones by means of ligaments and are thus kept in position and do not fall off.' Sushruta possessed accurate knowledge of joints, which he totalled as 210, and provided their numerical distribution in the extremities, trunk, head and neck. He classified joints as movable and immovable and subdivided them into hinge (kora), ball-and-socket (ulukhala), and so on.

Sushruta's description of muscles was less accurate than that of bones even though his total of 513 for the body is amazingly close to the modern figure of 500. He recognized ligaments (snayus) and their function: 'As a boat of wooden planks, well tied by many knots, can bear the weight of animals and goods in water, so a man can carry weight as his joints are knotted together by the snayus.' Occasionally he confused nerve trunks with ligaments.

The field of cardiovascular anatomy, Sushruta could build upon many references to the heart and blood vessels from earlier texts, including the Atharva Veda and Upnishads. He described the heart as having the shape of a lotus bud, hanging with its apex downward and serving as the primary seat of rasa, which runs through the whole body. He described four kinds of ducts, even though their origins were left vague. It is difficult to know the exact meaning of statements such as 'the ducts emanating from the cavity of heart, other than the sira and dhananis, and found to course through the body are called srotas.' He definitely referred to 24 dhananis arising from the heart and their carrying vital principles of the body. The words sira, dhananis and srotas and mention of the transport of pitta, kapha and rakta through channels abound in Sushruta's angiology, and one tends to agree with Seal that 'the standing puzzle of Indian anatomy and physiology is the classification of siras, dhananis and srotas, the channels, passages and ducts in the body, including the arteries, veins, nerves and lymphatic vessels.' Kutumbiah concluded that the differentiation of the arterial and venous systems was not achieved and that nerves too were included in the category of sira and dhananis by ancient Indians. It is curious that the brain does not find a major place in the ancient medical literature of India. Sushruta does refer to a nerve on either side of the larynx, damage to which produces hoarseness of the voice; he does also mention olfactory and optic nerves.

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**Table: Summary of Sushruta's osteology**

<table>
<thead>
<tr>
<th>Part</th>
<th>Sushruta</th>
<th>Modern</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head and neck</td>
<td>66</td>
<td>30</td>
<td>Included teeth, trachea</td>
</tr>
<tr>
<td>Trunk</td>
<td>128</td>
<td>50</td>
<td>Included costal cartilage</td>
</tr>
<tr>
<td>Four extremities</td>
<td>106</td>
<td>120</td>
<td>Carpus and tarsus</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>200</td>
<td>Regarded single bones</td>
</tr>
</tbody>
</table>
Since the ancient authorities regarded the heart as the seat of consciousness, they included nerves in the cardiovascular system and apparently relegated the brain to a position of secondary importance. Among the internal organs, the lungs, stomach and intestines were noted and the intestine was divided into small and large intestine. Rectum, urinary bladder and anus were accurately described. While the source of urine was indicated to be channels too fine for the eye, the ureters were noted to fill the bladder constantly with the waste products of the body. Uterus and vagina were described correctly.

The taboos on the dissection of fresh cadavers and the imperfect technique of dissecting cadavers handicapped anatomical studies in those days. They were compensated only in part by surgical observations. The need for surgical exposure obliged the surgeon to learn regional anatomy in the form of marmas, which advanced anatomical knowledge as well as surgical technique. In summary, systematic anatomy did not attain the accuracy and depth of regional anatomy in ancient India.

Turning to the doctrine of tridosha, its enormous influence on Indian medicine is matched only by its conceptual difficulties and bewildering interpretations. Its origin can be traced to the Rig Veda, which contains a reference to tri-dhatu7 and seminal concepts such as that of the body being composed of elementary ingredients called dhatus. From Vedic times, matter was regarded as the combination of five elementary parts or dhatus, namely space, air, fire, water and earth. Ancient Indian medical authorities believed that the body is a community of the variants of the five elements, which were in turn called dhatus. When the dhatus hold together and remain in equilibrium, the state is called dhatu samya, which is equivalent to health. When their normal measure is disturbed and they are in disequilibrium, the result is dhatu vaishamya, or ill health. The dhatus are formed from ingested food, the unassimilated fraction of which is excreted. Besides the fraction from food, what is excreted also includes refuse generated by dhatus during their physiological operations (dhatumala). The tridosha doctrine holds that all waste products, vata, pitta and kapha are responsible for ailments and that causes (nidanus) can disturb the dhatus and produce disease only through the disturbance of vata, pitta and kapha. Because they vitiate the dhatus, vata, pitta and kapha are called doshas and the dhatus that undergo vitiation are known as dushtas. There is no unanimity among Charaka, Sushruta and Vagbhata on the pathophysiological status of vata, pitta and kapha or their pathogenetic mechanisms. In the anxiety to integrate the human microcosm with the universal macrocosm, vata, pitta and kapha were even identified with sun, moon and air from time to time.

The tridosha doctrine evolved over many centuries and provided a scientific framework for ancient medical thought in India. At the philosophical level, it sought to identify bodily elements with the elements of the universe; at the practical level, it provided a rationale for classifying diseases on the basis of the disturbances of doshas. The doctrine provided a physiopathological matrix wherein health and disease were assigned their proper roles by ancient Indians.

1. Atharva Veda, VII, 8.3.  
2. Atharva Veda, I, 9.3.  
3. Atharva Veda, X, 2.  
5. Chandra, Upanishad, VII, 1.2.  
7. Charaka Samhita, III, 8.  
8. Sushruta Samhita, III, 5.49.  

M. S. Vagladian is Director, Sree Chirra Trivandrum Institute for Medical Science and Technology, Trivandrum 695 011