

## Sciatica: a historical perspective on early views of a distinct medical syndrome

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The authors offer a brief overview of early theories and treatments of sciatica. Tracing medical traditions through early Greek, Roman, and Eastern epochs, the authors demonstrate the slow sequential steps that were required to delineate this disease as a uniquely human affliction.

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Due to the dynamics of the human spine, lumbar disc syndrome and accompanying complaints of sciatica are long-standing afflictions of our species. Although Greco-Roman physicians eruditely described this ailment, their uneven diagnostic and therapeutic acumen hampered an understanding of the disorder for many centuries. It was not until 1934, with the landmark publication of Mixter and Barr,<sup>14</sup> that the herniated lumbar disc was shown to be a major cause of sciatica. This reflects only one of many scientific discrepancies that have surrounded the concept of sciatica as a distinct clinicopathological entity. In this paper, we present an overview of sciatica as it was understood by early Greek, Roman, and Eastern physicians and scholars. We particularly focus on the slow, sequential stages that were required to delineate this disorder as a uniquely human affliction. Although quadrupeds can have disc problems,<sup>4</sup> it is probable that human's upright posture and relative longevity have exposed our species to a special, unwelcome affinity for lumbar disc syndrome and associated sciatica. Increasing axial somatic weight bearing, long periods of standing and walking, and the additive stresses associated with running, bending, weight lifting, or merely jumping, can exact a toll on the spinal column, resulting in substantial degenerative sequelae. In modern times, and certainly in Western Europe and North America, this affliction ranks as one of the most costly and ubiquitous medical problems.<sup>9</sup>

### EARLY NOTIONS OF SCIATICA

#### *Primitive Period*

Considering the contemporary prevalence of sciatica, it is not unreasonable to suppose that in earlier centuries this affliction also claimed its share of victims. Unfortunately, in the most primitive circumstances therapeutic intervention was seldom directed by anyone more competent than the local witch doctor. It is highly unlikely that such a person had access to written language and, thus, we do not know the general views of witch doctors on sciatica. Nevertheless, Sigerist,<sup>16</sup> has observed that the sudden sharp nature of the sciatica attack struck primitive people as an evil display of demon magic, such as the witch's shot (Hexenschuß) of the Germans or the elf's arrow of the early British. Such demons could be defeated by a number of rather stressful interventions, which, even if they were not physiologically justified, did exert an important placebo effect. In some localities, such views have persisted into our own century. Among Egyptians in very rural regions, for instance, the belief that *junin* (devils) cause sciatica remains widespread.<sup>17</sup>

#### *Ancient Greece*

Standing a step above such folk medicine, the more advanced scholars of ancient Greece considered sickness

a naturally occurring physical imbalance that was identifiable by close observation and curable by rational treatment. Knowledgeable commentators who compared the body with empirical observations and philosophical concepts of reality systemized, if imperfectly, the broad dimensions of health and disease. In such circles, some knowledge of medicine was believed to be an obligatory portion of every scholar's intellectual life. In the face of this intellectual leverage, by the fifth century BC sciatica was a widely recognized, if poorly delineated, disease. Although there was at least one restrictive clinical description that corresponded to the contemporary definition of sciatica,<sup>6</sup> any complaint referable to the general area of the hip was considered to be sciatica at that time.

Understandably, this overbroad definition confused the origin of the syndrome; however, based on observed associations, several suspected causes of the affliction were enumerated in the Hippocratic writings. Hippocrates believed that the disorder was more prevalent during the summer and autumn months.

In autumn many maladies which occur in summer prevail, besides quartan and erratic fevers, affections of the spleen, dropsy, consumption, strangury, dysentery, sciatica, quinsy, asthma, volvulus, epilepsy, mania, and melancholy.<sup>5</sup>

The increased incidence of sciatica during these seasons was probably related to the more vigorous physical activity associated with farming and athletic training. The Hippocratic writings, however, indicate that the increased seasonal powers of the sun might "dry up" joint fluid and, thus, produce symptoms.<sup>6</sup>

Alternatively, Hippocrates observed that the affliction was more common among the upper classes and, especially, among those who could afford the luxury of frequent horseback riding. He believed such excesses produced a "sexually very weak" population that was much afflicted by a "swelling time of the joints, sciatica, and gout." As a group done in by too much horseback riding, Hippocrates pointed to the barbarous, saddlebound Scythians. These marauders, he believed, were effectively sterilized by outdoor indulgence.<sup>6</sup> The association of sterility and spinal disease can only be appreciated by recognizing two essential Hippocratic beliefs. 1) The spinal cord, considered to have a divine origin in ancient Greek medicine, communicates with the kidneys and the genital organs of the male through the veins. 2) Sperm is actually produced in the spinal cord.<sup>12</sup>

As demonstrated by numerous statues of the period, the ancient Greeks recognized scoliosis and kyphosis. According to Hippocrates, however, the term "scoliosis" had a generalized meaning that was applied to almost every kind of spinal curvature.<sup>12</sup> Unfortunately, while exalting the living body, the Greeks considered the dead one to be an empty, unclean shell and, thus, did not perform systematic postmortem examinations to study spinal abnormalities. Despite the prohibition on dissections of the human body in ancient Greece, Hippocrates was a firm and, perhaps, the first proponent of the scientific maxim of the structure-function interrelationship and its significance for physicians in the everyday practice of medicine: "One should first get a knowledge of the structure of the spine; for this is also requisite for many diseases."<sup>7</sup> In the Hippocratic writings, cases in which untoward

nerve root pressure caused lumbar tilting were not distinguished from those of congenital vertebral disorders. Long-term complications of sciatica were interpreted within the wider context of a spine-hip-joint pathoanatomical complex.

After protracted attacks of sciatica, when the head of the bone [femur] alternately escapes from and returns into the cavity, an accumulation of synovia occurs.<sup>5</sup>

Hippocrates also provided an astute observation on the relationship of sciatica, analgesic posture, and claudication.

When, in consequence of long continued disease of the hip-joint [sciatica], in the head of the thigh-bone is thrown out of the socket, the limb withers, and lameness occurs, unless the cautery be applied.<sup>5</sup>

In each group of disorders affecting the spine or hip region, excessive efforts at corrective traction were undertaken, often with predictably bad results.<sup>11</sup> For the numerous cases of sciatica that were not associated with obvious vertebral column distortion, however, more reasonable methods of conservative treatment were used. This therapy was based on both empirical and theoretical considerations designed to restore psychological balance. Massage, heat, dietary alterations, bed rest, and music "to pipe away pain" were commonly prescribed.

### *Roman Empire*

As the Roman state expanded into other territories, wielding decisive military and political power, the earlier Greek medical heritage became a prize for the emerging Roman intellectual establishment. Encouraged by the ease at which they could obtain Roman citizenship, Greek physicians were commonly found in imperial domains and freely transmitted their opinions on sciatica. Indeed, although they vociferously disapproved of Greek physicians, their natural intellectual competitors, both Pliny and Cato made free reference to sciatica in their writings.<sup>13</sup>

Like the Greeks, the Romans continued to confuse sciatica with diverse pathological processes such as gout, osseous tuberculosis, dislocation of the hip, and poliomyelitis. Nevertheless, the escalating clinical skills of the Romans did provide a considerable insight into the manifestations and treatment of the disease.

In the fourth century after the birth of Christ, Caelius Aurelianus, repeating many earlier observations made by Soranus, reported that sciatica commonly occurred among all age groups, but its prevalence was highest among middle-aged persons. The affliction he described was characterized by a strong, severe pain emanating from the lower back and radiating into the buttocks, perineum, and even the popliteal fossa, calf, foot, and toes. The pain was accompanied by a severe low-back spasm, sensory disturbances, and in chronic cases, muscle wasting of the affected lower extremity. Caelius Aurelianus observed that constipation and claudication appeared with such complaints. He reported that such difficulties caused sciatica sufferers to alter their posture during the act of defecation. Among one group he observed that such straining provoked pain in the toes, whereas in another he noted a "woodenness," a crooked posture, and the inability to bend forward. Confusing sciatica with osseous tuberculosis, he stated that, at the height of the disease, a "humor"

## Early views of sciatica

collected that “corrupted” into pus and produced a multitude of abscesses,<sup>3</sup> an association that indicates a high incidence of tuberculosis in ancient times.

Based on associations that he had observed, Caelius Aurelianus offered numerous explanations of origin for the syndrome. A sudden jerk or movement during exercise, unaccustomed digging in the ground, lifting a heavy object from a low place, lying on the ground, a sudden shock, a fall, or continuous and immoderate sexual intercourse could all produce the affliction. More remotely, he believed that termination of hemorrhoidal bleeding, especially in a sexually active man, could provoke an attack of sciatica.<sup>3</sup>

Caelius Aurelianus also believed that a sciatica attack could be caused by a “deep-seated congelation”—a view that somewhat mirrored an opinion stated in the first century by Aretaeus of Cappadocia. Aretaeus had asserted that, although squeezing or cutting off nerves was painless, intrinsic maladies of nervous tissue, such as sciatica, could cause the most intense form of pain. It is important to note, however, that for the early Romans the term “nerves” referred not only to nerves but also to tendons and ligaments. Since the Hippocratic era, early Greek and Roman physicians were unable to separate tendons from ligaments and nerves. All these anatomical structures were thought to be parts of the muscular system and were often collected under the term “nerves.”<sup>12</sup> Thus the assertions of Aretaeus were really directed to “ligaments of the joint”<sup>12</sup> and not to nerves.

Therapy for the affliction was varied. Reflecting the devotion to polypharmacy common in ancient times, Octavia, the sister of Augustus and first wife of Mark Antony, treated sciatica with a mixture of “sweet ma[r]joram, rosemary leaf, wine and olive oil;” this concoction was combined with wax and stored in an earthen jar for future use as a plaster.<sup>8</sup> Caelius Aurelianus treated the syndrome with bed rest, massage, heat, and passive range-of-motion exercises. For more difficult cases, he recommended leeches, hot coals, skin hooks, and blood letting.<sup>3</sup>

### The East

Not long after the death of Caelius Aurelianus, the barbarian invasions of the fifth and sixth centuries extinguished the erudition that had been prevalent in the West. Fortunately, the Greco-Roman tradition of medical knowledge persisted in the Byzantine Empire. Writing in the seventh century, Paul of Aegina repeatedly confused sciatica with gout. He believed that symptoms of sciatica were caused by a thick humor that disturbed the articulations of the hip joint. Sciatic pain extended from regions “about the buttock and groin to the knee, often as far as the extremities of the foot.”<sup>11</sup> Paul advised a trial of conservative therapy, but cautioned that, if the trial were unsuccessful, the disease might terminate in suppuration or a relaxation of the supporting ligaments and thigh dislocation. To avoid such complications, Paul advocated burning the joint in “three or four places in chronic cases.”<sup>11</sup>

Coexisting with the Greco-Roman system of medicine, ancient Hebrew medicine displayed some familiarity with both sciatica and the sciatic nerve. Jacob, for instance, may have lost his well-known wrestling match (Genesis 32:25–32) because of an injury to his sciatic nerve. In-

deed, out of deference to Jacob’s injury, sciatic nerves of animals were declared unsuitable for human consumption. Amplifying this point, the *Talmud* provides specific instructions for the removal of the sciatic nerve from the flesh of slaughtered animals. In the *Talmud* sciatica is identified as schigroma and it is suggested that fresh brine be rubbed in painful areas 60 times as a treatment.<sup>15</sup>

Geographically close to the Hebrews and also aware of the Greco-Roman tradition of medicine, the ancient Arabs shared an awareness of sciatica. Indeed the Arabic word for the sciatic nerve, *irk ol-nasha*, is quite close to the Hebrew, *gid-ha-nasks*.<sup>15</sup> Although he was constrained by a traditional Islamic reluctance toward the invasive treatment of fellow believers, Serapion Senior, whose writings appeared in the second half of the ninth century, used a hot cautery to treat sciatica. His contemporary, Razes in Baghdad, claimed to have successfully treated 1000 cases of sciatica, mostly by bleeding one of the lower extremities, a process for which he developed four separate and rather elaborate methods. Avicenna, writing approximately 150 years later, was less physically aggressive and recommended meixaragl (picrotoxin) for the treatment of sciatica.<sup>13</sup>

Somewhat outside this tradition, ancient Indian medicine underwent a largely independent development. The concept of marmas was central to Indian medicine. These are discrete areas of the body in which muscles, vessels, ligaments, bones, and joints allegedly all join one another. Although clear descriptions of sciatica are infrequent among early Indian texts, if the kakundram marma (located approximately in the lumbosacral area) was injured, an early Indian physician would expect loss of sensation and paralysis in one of the lower extremities.<sup>10</sup>

## CONCLUSIONS

A short overview of the historical evolution of the concept of sciatica demonstrates the inherently slow progression of human knowledge toward understanding complex natural phenomena. An interest in the evolution of medical terminology and disease classification is not solely an academic endeavor; it also demonstrates the intricate interaction between the mindful observation of disease symptoms and the uniquely human attribute of formulating scientific concepts primarily via linguistic tools.

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