Study of glaucoma has a long history

SINCE the invention of the ophthalmoscope, improvements in diagnostic technology have provided an increasingly more refined definition of glaucoma. But in the centuries prior to that, the term glaucoma had been applied to a wide range of disparate conditions, according to Georgios Balanikas MD PhD, Katerini, Pieria, Greece.

At the 6th International Symposium of Glaucoma, Dr Balanikas provided an historical perspective on the study of glaucomatous pathology and its changing definitions from antiquity to the modern era.

He noted that the word glaucoma derives from the Greek 'glaucus' a word appearing in the works of Homer where it seems to mean a sparkling silver glare. Later the word was used for colours such as sky-blue or green. The word entered ophthalmology when Hippocrates, in his 'Aphorisms', lists among the infirmities of the aged a condition he called "glaucion" which he associated with "dimness of vision".

Aristotle did not mention any diseases called glaucoma although he helped create the foundation for research into the pathology of the disease. In his work "On sense and sensible objects", he clearly refers to the aqueous humour, Dr Balanikas pointed out.

Glaucoma or cataract?

By the Roman era, most authors used the term glaucoma for what is now known as cataract. For example, Oribasius (325-400 AD) quotes Ruphus from Ephesus (1st century AD) as using the term for "that condition of the crystalline body in which the same loses its original colour and instead becomes blue-grey".

However, Archigenes, who practised at Rome in the time of Trajan (98-117 AD), used the term "ophthalmos glaucos" for a curable blindness that was not caused by cataract. Archigenes records that he used the juice of the deadly nightshade, a mydriatic, in the treatment of this condition, adding "the instilled juice of nightshade makes black the grey eyes."

Around the same era, Galen (129-216 AD) defined glaucoma as a condition in which changes in fluids of the eye caused the pupil to become grey. He also refers to the mydriatic effect of nightshade.

Aetius, the physician of the emperor Justinian (482-565 AD) and a great ophthalmologist, identified two forms of glaucoma, one a curable condition of the lens and the other an incurable condition that involved an effusion in which the pupil becomes thickly coagulated and dried.

The darkness before the dawn

During the Middle Ages, European authors did not introduce many new concepts into ophthalmic research and continued to follow in the traditions of the ancient authors with regard to glaucoma. Arabian authors of the same era also repeated the views of the ancients, although Snsad S in the 14th century described a migraine of the eye, a blinding condition associated with increased ocular tension.

However, it was not until the 17th century that several authors in medical science began to describe and investigate in a consistent way the condition now known as glaucoma. In 1622 the English physician Richard Banister (1570-1626) reported noticing a hardness of the eye in patients in whom cataract operations did not improve vision.

In the following century French ophthalmologist Charles Saint-Yves, in his treatise on the diseases of the eyes, described the inflammatory signs and symptoms of the acute (closed-angle) form of glaucoma and the persistence with which the attacks recurred.

"During the 18th Century most patients diagnosed with glaucoma were in an advanced stage with complete loss of vision and in many there was iris atrophy and congestion of the anterior ciliary vein, a dilated non-reacting pupil and sometimes lens opacity. Cases like this were abundant in the writings of the 18th and 19th century," Dr Balanikas noted.

It was Sir W I illiam Lawrence in 1832 in his "A Treatise on Diseases of the Eye" who gave a complete description of symptomaticatology of glaucoma. He was the first to use the terms "glaucoma" and "acute glaucoma" for the condition.

Around the same time, S Littell MD at Wills Eye Hospital described the same condition in his Manual of the Diseases of the Eye. He commented that the condition resembled amaurosis in many of its symptoms and was characterised by a green or yellowish discoloration of the vitreous humour and impairment or loss of vision. The second edition of his manual in 1846 gave a more precise definition of the condition adding "hardness of the globe" to its description.

"If we look at the writings between 1830 and 1850 we will notice that the external symptomaticatology of the acute and chronic forms had come to be recognised but ophthalmologists thought that the pathogenesis was inflammatory because of the clinical signs of the disease during its acute phases, such as the swelling congestion and pain which they thought resulted from an acute or chronic inflammation of the choroid," Dr Balanikas noted.

The modern era begins

W I i l i a m McKenzie MD (1791-1868), in his widely read textbook on ophthalmology, distinguished the acute and chronic (open-angle) glaucomas. He also gave a detailed description of the course of chronic glaucoma and divided the progression of the disease into six stages. In the first stage the pupil has a greenish hue, in the last stage the eyeball becomes atrophic after perforation of a corneal ulcer in absolute glaucoma, Dr Balanikas explained.

"Dr McKenzie also knew about the hardness of the glaucomaticous eye in the second stage and was the first to recommend a form of surgical treatment to relieve the abnormal hardness. He suggested that "occasionally puncturing the scleroticus and choroid might prove to be serviceable by taking off the pressure of the accumulated fluid on the retina," he added. However, Dr McKenzie was opposed to the use of the ophthalmoscope, insisting that it could be harmful to the retina. It was therefore up to Albrecht von Graefe in 1857 to describe amaurosis with excavation of the disc in closed-angle glaucoma and his associate Franciscus Cornelis Donders to identify a similar pathology in eyes with open-angle glaucoma, which became known for a time as Donders' glaucoma.

"The invention of the ophthalmoscope in 1851 by Hermann von Helmholtz opened a fresh new look at the disease and signalled the modern era in definition diagnosis and treatment of glaucoma," Dr Balanikas concluded.

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