



XXXI CONGRES INTERNATIONAL D'HISTOIRE DE LA MEDECINE
XXXI INTERNATIONAL CONGRESS ON THE HISTORY OF MEDICINE
XXXI CONGRESSO INTERNAZIONALE DI STORIA DELLA MEDICINA



Bologna, 30 agosto - 4 settembre 1988

MA · CM · LXXXVIII

*Sous le Haut Patronage du Président de la République Italienne
Under the High Patronage of the President of the Italian Republic
Sotto l'Alto Patronato del Presidente della Repubblica Italiana*

FRANCESCO COSSIGA

Alma Mater Studiorum Sæcularia Nona

Schola Artis Medicinæ Sæcularia Septima

ACTES PROCEEDINGS ATTI

a cura di

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From Bologna to Dublin: the story of aortic regurgitation

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ABSTRACT

The cities of Bologna and Dublin are both celebrating anniversaries in 1988; in Bologna the occasion is the ninth anniversary of the oldest university in the western world; Dublin is honouring the millennium year of the city's foundation. The two cities are joined in medical history through the story of aortic regurgitation. In 1761, Giovanni Morgagni gave a classical description of the pathological manifestations of the condition, and in 1832 Dominic Corrigan published his treatise on the disease which now bears his name. The story of aortic regurgitation together with an account of some of Corrigan's achievements outside of medicine are presented.

INTRODUCTION

The story of aortic regurgitation serves as a timely link between two cities and two scientists. Bologna is paying tribute to the Alma Mater Studiorum in the year of its ninth centenary by hosting the XXXI International Congress on the History of Medicine. This year, Dublin is celebrating its millennium.

Bologna was the home of Giovanni Batista Morgagni, who described the pathological manifestations of aortic regurgitation in 1761. Dominic Corrigan, a native of Dublin, published a treatise on the

pathological and clinical manifestations of the condition in 1832.

Morgagni and Corrigan each developed interests outside of science and each made significant contributions to society other than through their original avocation. Morgagni's contributions to philology, archaeology, literature and history are well known but Dominic Corrigan's humanitarian achievements, which have largely passed unnoticed, are worthy of reassessment.

DOMINIC CORRIGAN

Dominic Corrigan was born to Catholic parents of modest means in Thomas Street in the Liberties of Dublin in 1802. He was educated at St. Patrick's College in Maynooth, and studied medicine in Dublin. He graduated, with his famous contemporary William Stokes, at Edinburgh in 1825. Both returned to Dublin. Stokes succeeded his father as physician to the Meath Hospital where he joined Robert Graves. Corrigan set up practice among the poor in the quayside area of the city (1). He published a number of papers in the *Lancet* on fever which earned him a certain renown. In 1830, the year after Catholic Emancipation, he was appointed physician to the Charitable Infirmary in Jervis Street, where he made his study of aortic regurgitation which was published in 1832.

The Charitable Infirmary, the first voluntary hospital to be founded in the United Kingdom of Great Britain and Ireland (in 1718), was dominantly a surgical hospital and the surgeons refused to accede to Corrigan's request for more beds. In 1840 he applied successively for the position of Physician to the House of Industry Hospitals where he was given charge of the Hardwicke Fever Hospital. During the Great Famine of 1845-50, in which almost one million of the population perished, Corrigan was appointed by the Government to the Central Board of Health to organise the provision of health facilities throughout the country.

Corrigan's achievements on the Central Board of Health and on Government Commissions on Lunatic Asylums and National Education earned him the gratitude of Queen Victoria to whom he was appointed Physician-in-Ordinary in 1847; in 1866 he was created a Baronet of the Empire. He was elected President of the Royal College of Physicians of Ireland in 1859, a position which he occupied for an unprecedented five consecutive years during which time he directed the erection of the fine College Hall in Kildare Street.

Coming from a deprived background, Corrigan had a very acute awareness of the importance of education which the majority of Catholics in Ireland were denied. He gave generously of his time to the organisation of a national programme of general education. However, it was to the provision of university education that he devoted most of his energy. He served for many years on the Senate of the Queen's University, becoming Vice-Chancellor in 1871.

He was elected to parliament 1870. At Westminster he gave his support to two main causes: the temperance movement, which made him few friends at home, and university education. He advocated the foundation of a non-sectarian national university for Ireland believing that a university should concern itself only with the knowledge of its students and that their creed and race were not of relevance. The Catholic clergy at home were incensed with his stance at Westminster and such was the opposition to his liberal views that he decided not to seek re-election to parliament.

Dominic Corrigan died in his 79th year at his home in Merrion Square in 1880.

THE STORY OF AORTIC REGURGITATION

The story of aortic regurgitation had its beginnings in the discovery of the circulation by William Harvey in *De Motu Cordis et Sanguinis* in 1628 (2) in which he emphasised the importance of valvular competence in maintaining the integrity of the circulation.

The first reference to the consequences of valvular incompetence was made by William Cowper in 1706 (3). In 1715 Raymond Vieussens gave a classical description of the pulse (4). Vieussens also related the pathological condition of the valves to deranged function.

In 1761, Giovanni Batista Morgagni published a clear account of the pathological manifestations of aortic regurgitation in *De Sedibus et Causis Morborum per Anatomen Indagatis* (5).

*The several valves of the heart
are so arranged that the blood
once received into the ventricles
shall never regurgitate and once
forced into the pulmonary artery
and aorta shall not flow back
upon the ventricles.*

In 1815, Joseph Hodgson described aortic regurgitation in association with dilatation of the aorta (6). The first comprehensive account of aortic regurgitation was written in 1822 by Thomas Cuming (7), Physician to the Dublin General Dispensary and the Wellsley Fever Hospital and Lecturer at the Richmond School of Medicine. His paper, entitled "A Case of Diseased Heart with Observations" was published in the *Dublin Hospital Reports* of 1822. It remained unnoticed until Evan Bedford brought it to attention in 1967 (8). Cuming's patient was conscious of "violent pulsation of the heart and larger arteries" which "were so strong as to be visible from a considerable distance." The pulse was "regular, full, hard, and vibrating." At autopsy Cuming found the heart to be greatly enlarged, the coronary arteries patent and the aortic valve shrivelled with irregular, thickened, cartilaginous margins, which "when stretched to the uttermost...did not reach within the tenth of an inch of the openings of the coronary artery." Cuming differentiated between

aortic regurgitation, in which the pulse was "full, hard, and vibrating," and aortic stenosis with its "small, feeble, and thready pulse," and in this observation he predates Corrigan to whom credit for this distinction is usually attributed. This remarkable description of aortic regurgitation does not match Corrigan's comprehensive treatise, but it was a significant contribution.

The next important contribution on the subject was a paper by Thomas Hodgkin. His paper, entitled "Retroversion of the Valves of the Aorta", appeared in the *London Medical Gazette* in 1829 (9) just three years before Corrigan's paper. It is not difficult to see why Corrigan (and, indeed, most physicians of the time) overlooked Hodgkin's contribution. The *London Medical Gazette* first appeared in 1827 and it was some years before it attracted a general readership. Of more relevance, however, is the fact that Hodgkin's method of presenting his findings in two letters was unlikely to attract attention. He did, nonetheless, present some of the important manifestations of aortic regurgitation three years before Corrigan, and had he taken the same care as Corrigan in presenting his findings, he might have achieved dual eponymity. As it was, his paper languished in obscurity until it was brought to attention in 1871 by Samuel Wilks (10), who had performed a similar duty for Hodgkin's paper on the lymphoma which now bears his name.

CORRIGAN'S PAPER ON «PERMANENT PATENCY»

On April 1st, 1832, D.J. Corrigan, M.D. one of the physicians to the Charitable Infirmary, Jervis Street, Dublin, Lecturer on the Theory and Practice of Medicine and Consulting Physician to St. Patrick's College, Maynooth, writing from 13 Bachelor's Walk, published a paper in the *Edinburgh Medical and Surgical Journal* entitled "On Permanent Patency of the Mouth of the Aorta, or Inadequacy of the Aortic Valves" (11). Though he was to write many other papers and achieve eponymous recognition elsewhere, his reputation in medicine rests on this paper.

The reader's attention is instantly claimed by the opening sentence: "The disease to which the above name is given has not, so far as I am aware, been described in any of the works on diseases of the heart." This audacious claim is not as unjustified as might first appear to be the case. Corrigan later qualified what he regarded as a 'description' by stating that aortic regurgitation "forms a considerable proportion of cases of deranged action of the heart, and it deserves attention from its peculiar signs, its progress, and its treatment." Corrigan's contribution must be viewed, therefore, as a comprehensive account of a condition, which though recognised previously had not been described fully in any of the major cardiological works.

Corrigan gave preference to the term *Permanent Patency* over his own title *Inadequacy of the Aortic Valves* "for the sake of uniformity", because Dr.

Eliotson had used the former term for a similar state of the mitral valve. In a later paper in which Corrigan described chronic fibrosis of the lung (12), he showed the same consideration for the medical nomenclature by using the term "cirrhosis of the lung" ("this disease is in the lung what cirrhosis is in the liver"), preferring to "add an additional fact than a new name to our science." He cannot have foreseen that both papers were to add two eponyms to the medical literature.

Corrigan began his account of aortic regurgitation by describing the pathology of the condition. He did not consider the symptoms to be helpful in diagnosis, which was to be made "by the certainty of the physical and stethoscopic signs." He proposed a triad of diagnostic signs:

- 1st, Visible pulsation of the arteries of the head and superior extremities.
- 2nd, *Bruit de Soufflet* in the ascending aorta, in the carotids, and subclavians.
- 3rd, *Bruit de Soufflet and fremitement*, or a peculiar rushing thrill felt by the finger, in the carotids and subclavians.

He made the distinction between the pulse of aortic stenosis, which is "small and contracted", whereas in regurgitation "it is invariably full and swelling." He emphasised the *visible pulsation* of the arteries of the head, neck and superior extremities which was more marked after exertion and in the standing position, or by elevation of the arm or leg.

Corrigan also discussed in considerable detail the course, prognosis, differential diagnosis, and the treatment of aortic regurgitation (13).

CLAIMS TO EPONYMITY

The physicians of the early nineteenth century were familiar with many of the pathological manifestations of valvular disease of the heart. The stethoscope stimulated the younger physicians, such as Corrigan and his Edinburgh contemporaries, James Hope and William Stokes, to observe and elucidate on the clinical signs of cardiac disease. Many before them had, indeed, described certain aspects of aortic regurgitation, but none with the exception of Cuming, Hodgkin and Corrigan had attempted to write a comprehensive treatise on the condition. So, whatever the claims to priority may be, the right to eponymous recognition must rest with this trio. There was, however, another contender for eponymity - James Hope of St. George's Hospital in London. In the third edition of his book on heart disease published in 1839 (14), he stated; "To the murmurs of Laennec, I added, in the first edition of this book in December 1831, the murmurs from regurgitation." This claim is quite justified. He had indeed mentioned the diastolic murmur of aortic regurgitation, its radiation, the reason for its poor intensity, and he had referred to the "full, strong and regular, but

compressible pulse " of the condition. However, nowhere in this excellent pioneering work on cardiology does he describe the disease as an entity in itself, and his comments which are few are dispersed throughout the general text.

Hope claimed that he had discovered aortic regurgitation in June 1825 "in the remarkable case of Christian Anderson", and furthermore, that he "also taught the regurgitation at St. Bartholomew's Hospital in 1826, and at La Charite, Paris, in 1827." The latter claim does not, of course, warrant consideration and to put it forward was, to say the least, rather naive. If we examine "the remarkable case of Christian Anderson" it becomes clear that Hope was describing mitral rather than aortic regurgitation. In fact, he stated quite clearly that the aortic valve was "natural" at autopsy, and the murmur arose from "regurgitation, through the auricular valves." In dismissing Corrigan's paper, Hope, showed that he had not studied the work carefully. He accused Corrigan of being unaware, not only of his work, but also of that of Dr. Elliotson, and this in spite of the fact Corrigan paid tribute to Elliotson's description of mitral regurgitation by using his term *Permanent Patency*.

To return to the other claimants. Cuming's paper, though remarkable for its time, did not attract attention, because, as its vague title shows, he himself had failed to realise the importance of what he was describing.

Even if Hodgkin had presented his facts more carefully, it is evident that he did not have the same knowledge of the disease as Corrigan; his reasoning was not as succinct, and his conclusions were not as accurate or as detailed. It seems reasonable, therefore, that Corrigan's name should be attached to aortic regurgitation.

HISTORY OF THE EPONYM

One of the first to pass comment on Corrigan's paper was Robert Graves. Though he recognised the importance of his younger colleague's paper, he had some reservations. Presenting a case with the clinical manifestations of aortic regurgitation, but lacking pathological evidence, he believed himself justified in stating "that the symptoms which are given by Dr. Corrigan, as diagnostic of permanent patency of the aortic valves, are extremely uncertain, and that he has established his diagnostic marks too hastily." He added that it was not his intention "in the slightest degree, to undervalue his very ingenious contribution; he has treated of a new and difficult subject, and his essay is highly valuable for its able and well digested practical remarks." (15)

In Paris, the celebrated Andral, spoke highly of the young Irishman's contribution: "to Dr. Corrigan of Dublin we are in the first instance indebted for a knowledge of this structural anomaly." (16)

The first paper to use the eponymous appellation was the French journal *La Lancette Francaise. Gazette des*

Hopitaux (17), which published a case report of *Maladie de Corrigan* in 1839. The report concluded: "it is on these united signs that we base our diagnosis and we believe we can affirm that this man has Corrigan's Disease."

Armand Trousseau used the term *Maladie de Corrigan* for both aortic regurgitation and Corrigan's description of 'cirrhosis of the lung' (18).

The eponym *Corrigan's Disease* was popular at first, but then Corrigan's name was applied to the pulse, and *Corrigan's Pulse* became the more popular term. Towards the end of the nineteenth century *Corrigan's Pulse* was being likened to the popular Victorian toy, the water-hammer. Not only were the two descriptions used synonymously, but Corrigan was actually credited with coining the term. Thus, Clifford Albutt wrote in 1909: "The character of the pulse is well known. The gifted physician to whom we owe most of our knowledge of this subject has given a memorable description of it. Corrigan compared it to the water-hammer..." (19).

George Dock has researched this historical error, and shown that the pulse of aortic regurgitation was likened to the water-hammer as early as 1840 by Thomas Watson (20).

CONCLUSIONS

A review of the literature shows that the eponym *Corrigan's Disease* was readily accepted and is fully justified. However, Corrigan's paper while depicting clearly the visible carotid pulsation of aortic regurgitation, does not emphasise the palpatory characteristics of the pulse, and the eponym *Corrigan's Pulse* should, therefore, be reserved for the visible carotid pulsation.

The term "water-hammer pulse" was not used by Corrigan, and as most contemporary clinicians and their students are unlikely to be familiar with the palpatory sensation of a water-hammer, the term should no longer be used.

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