traumatic to the latter. Thus, the congenital bicuspid aortic valve, whether competent or incompetent, is potentially subjected to mechanical injury.

One begins to wonder about the validity of the theory that the anatomically perfect bicuspid aortic valve may be stenotic when one considers the state of the venous valves. The latter usually are bicuspid semilunar valves with considerable similarity in structure to the congenital bicuspid aortic valve. Yet the normal peripheral venous system offers no evidence of an obstructive factor. Perhaps this may be the result not of imperfections in the venous valves, as suggested for the congenital bicuspid aortic valve, but rather the result of dilatation of the vein at the site of a valve. Thus, while the venous valve may be so constructed as to be stenotic, the vein is larger at the site of the valve, and the diameter of the "stenotic" valvular orifice may be equal to that of the nondilated parts of the vein both above and below the valve.

The foregoing observations may be summarized as follows: the anatomic basis for the absence of intrinsic stenosis in the congenital bicuspid aortic valve is the very basis for the occurrence in this congenital anomaly of aortic valvular incompetence and also of traumatic influences that represent a tendency to the development of bacterial endocarditis and acquired calcific stenosis.

JESSE E. EDWARDS

References


Laennec and his predecessors have assigned to diseases of the heart a certain series of symptoms, which they conceived to be common to the whole; but they had not analysed those symptoms and ascertained which were peculiar to, and pathognomonic of, the several affections taken individually. M. M. Bertin and Bouillaud, both writers of high talent, made this attempt, and with partial success; but the spirit of generalization, (if I am correct in my own view) carried them a grade too far. What observation leads me to regard as an inaccuracy constitutes the hinge of their work—the pivot on which turns the principal train of their reasoning: namely, that the symptoms of a retarded circulation are, under all circumstances, the result of a mechanical obstacle to the course of the blood—that when, for instance, they accompany hypertrophy or dilatation, they are not consequences of these affections, but of some co-existent mechanical obstacle, as a contracted valve, an aortic aneurism, etc. I have attempted to show, not only that hypertrophy and dilatation can, of themselves, respectively occasion the symptoms in question; but, that these symptoms are seldom produced in any very remarkable degree of severity by a mechanical obstacle, unless hypertrophy, dilatation, or softening of the heart is superadded.—J. HORE, M.D. Diseases of the Heart and Great Vessels. London, William Fidd, 1832, p. 13.


To the physician particularly a scientific discipline is an incalculable gift, which leavens his whole life, giving exactness to habits of thought and tempering the mind with that judicious faculty of distrust, which can alone, amid the uncertainty of practice, make him wise.—Sir William Osler. Aphorisms from His bedside Teachings and Writings. Edited by William Bennett Bean, M.D. New York, Henry Schuman, Inc., 1950, p. 114.


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A single well-applied fact may carry conviction where reasoning will not.—Dominic John Corrigan, M.D. The Lancet 1: 586, 1829.
AORTIC-PULMONARY ANASTOMOSIS

At this long-term follow-up 92 patients were traced. Nine patients died at the time of surgery and, in the period from 1946 to 1959, 10 patients died, most often from congestive heart failure. To our knowledge only three patients have required a second shunt operation to relieve recurrent cyanosis. The clinical results were considered good or excellent in 68 per cent of the survivors, fair in 30 per cent, and poor in 2 per cent.

The long-term poor results and mortality were usually associated with too large an initial anastomosis leading to either left ventricular overwork and congestive heart failure or severe pulmonary hypertension and progressive pulmonary vascular obstruction.

Right heart catheterization studies indicated that in a group of 18 patients in whom the pulmonary vascular bed could be evaluated, 15 patients had a normal pulmonary vascular resistance after 11 to 13 years of a clinically adequate aortic-pulmonary shunt.

The role of the shunt procedures as a valuable salvage operation at the present time for a select segment of patients with tetralogy of Fallot and certain other complex cyanotic lesions is reemphasized.

References


In the physician or surgeon no quality takes rank with imperturbability.—Sir William Osler. Aphorisms From His Bedside Teachings and Writings. New York, Henry Schuman, Inc., 1950, p. 85.

The century dating from the birth of Galileo to the death of Harvey was perhaps the most brilliant in the history of modern knowledge. The discovery of Greek texts had destroyed the conventional Aristotle, the conventional Hippocrates and Galen; since the latter part of the sixteenth century Greek had been taught in the High Schools, philosophy was born again, and men found themselves no longer the slaves but the kin of the great ancients. Telesius, Bruno, Campanella vindicated natural science and liberty of thought. Galileo taught in Padua for twenty years, including the time when Harvey graduated there; Torricelli was a pupil of the great Florentine; in 1682, on the theory of Copernicus, Gregory reformed the Calendar, and thus laid the axe to the root of astrology; by Newton terrestrial physics were established in the celestial spheres. Malpighi, who was to fulfill Harvey's discovery and foresight, was born in N.-E. Italy in the very year (1628) in which the De motu cordis was published. In 1626 Boyle was creating chemistry. Anatomy, which had slept since its days in Alexandria, was fully awake. The Society of the Lincei was virtually founded in 1603; the Royal Society in 1645; the Academy of France in 1656. Clinical teaching, initiated in Salerno and advanced by the Consilia medica, was formally established in Padua, to be pursued in Heidelberg, Leyden, and Vienna.—THOMAS CLIFFORD ALLBUTT, M.A., M.D. Science and Medieval Thought. London, C. J. Clay and Sons, 1901, p. 99.

Now that geographical boundaries in our own and in other civilized lands have been determined, the pioneering spirit finds in scientific research enticing vistas for adventure. The twilight zone between what we know and the vast unlimited range of what we do not know presents us with innumerable frontiers. In this zone the opportunities for novel experiences are immensely more abundant than they have ever been in the long history of explorations on land and sea. Here is true pioneering. As in the early days, it imposes on the adventurer who wishes to become an explorer certain demands. What are they?

First among them is resourcefulness. The experimenter tries to imagine conditions that may be encountered; he may not meet them at all, but he may meet others he had not anticipated. New devices may be required to overcome unforeseen difficulties. As the frontiersman may make a corn knife out of a broken scythe blade, or a butcher knife out of a rusty file, or a soap factory from an empty barrel and an iron kettle, so the pioneering investigator may be compelled to use his ingenuity to the limit in adapting available apparatus and materials to the purposes he has in mind.

Another requisite is a forward look and a faith in the efficacy of present and future efforts . . . . In laboratories where experiments are going on, the hopeful "prospect" of the pioneer is still a prime motive. It is related to a characteristic pioneering attitude of the investigator—an unwillingness to be satisfied with what is already known. As Daniel Boone moved onward whenever he could see smoke rising from a chimney, so the worker in science advances toward novel realms of experience. A driving initiative compels him to seek new ventures.

The boundary of knowledge, however, is pushed forward with painful slowness, and always, as an advance is achieved, further territory to be explored is revealed.—WALTER B. CANNON, M.D. The Way of An Investigator. New York, W. W. Norton & Company, Inc., 1945, p. 27.
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**Water**

And it is especially worthy of note that of earth, air, fire, and water the last is the only one which happens to be an individual chemical compound. From that day to this the unique position of water has never been shaken. It remains the most familiar and the most important of all things.

Within a comparatively recent time, to be sure, it has definitely lost its claim to be a true element, in the modern sense, but meanwhile almost every great development of science has contributed to make its importance more clear. In physics, in chemistry, in geology, in meteorology, and in biology nothing else threatens its prééminence. The physicist has perforce chosen it to define his standards of density, of heat capacity, etc., and as a means to obtain fixed points in thermometry. The chemist has often been almost exclusively concerned with reactions which take place in aqueous solution, and the unique chemical properties of water are of fundamental significance in most of the departments of his science. In geology neptunism has at length won a certain though incomplete triumph over plutonism, and the action of water now appears to be far the most momentous factor in geological evolution. The meteorologist perceives that the incomparable mobility of water, which depends upon its peculiar physical properties and upon its existence in vast quantities in all three states of solid, liquid, and gas, is the chief factor among the properties of matter to determine the nature of the phenomena which he studies; and the physiologist has found that water is invariably the principal constituent of active living organisms. Water is ingested in greater amounts than all other substances combined, and it is no less the chief excretion.—Lawrence J. Henderson. *The Fitness of the Environment*. New York, The MacMillan Co., 1924, p. 72.
nated the fibrillation and restored normal sinus rhythm with or without the use of the external pacemaker.

It is noteworthy that no injuries to the thoracic cage were found at postmortem examination. One of the foreseeable complications of vigorous transthoracic massage is that of rib fractures with accompanying laceration of the underlying heart, great vessels, and other organs. In all likelihood, the elasticity of the thorax will have some influence on the safety and efficacy of this technic, although one of the successful resuscitations reported by Kouwenhoven et al. was in an 80-year-old woman.¹

The attractive features of closed-chest cardiac compression include its simplicity, ease of application, and general applicability regardless of place and regardless of whether the heart is in standstill or fibrillation. Valuable time may be gained through this method for obtaining other resuscitative equipment, such as an electric external pacemaker and defibrillator.

It is apparent from this case that substantial blood pressures, equal to the patient's own resting levels and slightly less than those produced by direct cardiac massage, can be obtained by this method. It appears likely that this is the procedure of choice in the treatment of cardiac arrest occurring outside the operating room or where an external pacemaker or defibrillator is not immediately available.

Summary

A case of ventricular fibrillation is presented which occurred during retrograde left heart catheterization and preparation for aortography. Direct arterial pressures were recorded from a catheter in the abdominal aorta during closed-chest cardiac massage. These indicated that substantial blood pressures can be readily produced by this simple and practical method.

References


Nothing will sustain you more potently than the power to recognize in your hum-drum routine, as perhaps it may be thought, the true poetry of life—the poetry of the commonplace, of the ordinary man, of the plain, toil-worn woman, with their love and their joys, their sorrows and their griefs.—Sir William Osler. Aphorisms From His Bedside Teachings and Writings. New York, Henry Schuman, Inc., 1950. p. 90.


On Permanent Patency of the Mouth of the Aorta, or Inadequacy of the Aortic Valves

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That this visible pulsation of the arteries is owing to the mechanical cause here assigned is made evident by several circumstances. It is most distinct in the arteries of the head and neck, which empty themselves most easily into the aorta, and of course into the ventricle. In the arteries of the lower extremities, of even larger size than those which present it about the head and neck, it is not seen to any comparative degree, and most generally not at all while the patient is standing or sitting. It is much more marked in the arteries of the head and neck in the erect than in the horizontal posture; and a patient suffering under the disease himself, first pointed out a circumstance which is convincing of its being produced as asserted. He could increase the pulsation of the brachial and palmar arteries in a most striking degree by merely elevating his arms to a perpendicular position above his head. He thus enabled the brachial and palmar arteries to empty themselves more easily back upon the aorta. They became more flaccid, and then, on the next contraction of the ventricle, their diastole became comparatively greater, and their visible pulsation of course more marked. The same effect could be produced in the arteries of the lower extremities by lying down and elevating the legs on an inclined plane.

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Infinity

Alike in the external and the internal worlds, the man of science sees himself in the midst of perpetual changes of which he can discover neither the beginning nor the end. If, tracing back the evolution of things, he allows himself to entertain the hypothesis that the universe once existed in a diffused form, he finds it utterly impossible to conceive how this came to be so; and equally, if he speculates on the future, he can assign no limit to the grand succession of phenomena ever unfolding themselves before him.—HERBERT SPENCER. First Principles. New York, reprinted from the Fifth London Edition, The Home Library, 1880, p. 57.

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