

参 考 文 献

1. Landmark article "Feb 25, 1939: Gross RE, Hubbard JP: Surgical ligation of a patent ductus arteriosus. Report of first successful case. JAMA 1939;112: 729-731" JAMA 1984; 251: 1201-1202.
2. Gibbon JH Jr. Application of a mechanical heart and lung apparatus to cardiac surgery. Minn Med 1954; 37: 171-185.
3. Committee of Science. Yasui H, Osada H, Ide H, Fujimura S. Thoracic and cardiovascular surgery in Japan during 1997. Annual report by Japanese association for thoracic surgery. Jpn J Thorac Cardiovasc Surg 1999; 47: 237-251.
4. 松下昌之助、三井利夫、平林国彦、平松祐司、木川幾太郎、野田康永、大川修一、土肥俊樹、榊原 謙、筒井達夫、井島 宏、堀 原一. CABG 症例における signal-average ECG による心筋障害の程度と手術予後. 日本心臓血管外科学会雑誌 1990; 20:182-184.
5. 松下昌之助、三井利夫、土肥俊樹、秋島信二、鈴木保之、中島英洋、海野英哉、平林国彦、軸屋智昭、厚美直孝、榊原 謙、筒井達夫、井島 宏、堀 原一. RMST と開心術後の心機能. 心臓 1991; 23 (Supple.4): 9-14.
6. 松下昌之助、三井利夫、阿部正一、藤井祐介、島田知則、平松祐司、平林国彦、厚美直孝、軸屋智昭、榊原 謙、筒井達夫、岡村健二、堀 原一. 開心術後重症心不全に対する補助循環の適応と離脱の指標としての signal-average ECG の意義. 心臓 1992; 24:7-11.

7. Cranefield PF, Hoffman BF. The electrical activity of the heart and the electrocardiogram. *J Electrocardiol* 1968; 1:2-4.
8. Langer PH Jr, Geselowits DB, Mansure FT. High frequency components in the electrocardiograms of normal subjects and of patients with coronary heart disease. *Am Heart J* 1961; 62:746-755.
9. Raynolds EW, Muller BF, Anderson GJ, Muller BT. High-frequency components in the electrocardiograms: a comparative study of normals and patients with myocardial disease. *Circulation* 1967; 35: 195-206.
10. Sapoznikov D, Tzivoni D, Weinman J, Penchas S, Gotsman MS. High frequency ECG in the diagnosis of occult coronary artery disease: a study of patients with normal conventional ECG. *J Electrocardiol* 1977; 10: 137-148.
11. Christenson DW, Reddy BRS, Rowlandson GI. Evaluation of Fourier transform filter for high-resolution ECG. *J Electrocardiol* 1989;22(Suppl): 33-40.
12. Simson MB. Clinical application of signal averaging. *Cardiol Clin* 1983; 1: 109-119.
13. Simson MB. Use of signals in the terminal QRS complex to identify patients with ventricular tachycardia after myocardial infarction. *Circulation* 1981; 64: 235-242.

14. Goldberger AL, Bhargava V, Froelicher V, Covell J. Effect of myocardial infarction on high-frequency QRS potentials. *Circulation* 1981; 64: 34-42.
15. Abboud S, Cohen RJ, Selwyn A, Ganz P, Sadeh D, Friedman PL. Detection of transient myocardial ischemia by computer analysis of standard and signal-averaged high-frequency electrocardiograms in patients undergoing percutaneous transluminal coronary angioplasty. *Circulation* 1987; 76: 585-596.
16. Scher AM, Young AC. Frequency analysis of the electrocardiogram. *Circ Res* 1960; 8: 344-346.
17. Abboud S. Subtle alterations in the high frequency QRS potentials during myocardial ischemia in dogs. *Comp Biomed Res* 20: 384-395, 1987.
18. Berbari EJ. A non-invasive technique for recording the depolarization of the heart's electrical conduction system. Master Thesis. University of Miami, Coral Gables, Florida, 1973.
19. Sagawa K, Lie RK, Schaefer J. Translation of Otto Fran paper. "Die Grundform des Arteriellen Pulses." *Zeitschrift fur Biologie* 37: 483-526, 1899. *J Moll Cell Cardiol* 1990; 22: 253-277.
20. Patterson SW, Starling EH. On the mechanical factors which determine the output of the ventricle. *J Physiol* 1914; 48: 357-379.

21. Sarnoff SJ, Berglund E. Ventricular function. I. Starling's law of the heart studied by means of simultaneous right and left ventricular function curves in the dog. *Circulation* 1954; 9: 706-718.
22. Sonnenblick EH. Force-velocity relations in mammalian heart muscle. *Am J Physiol* 1962; 202: 931-939.
23. 菅 弘之、大島正光. 左心室の圧-容積係数によるポンプ作用の解析. *医用電子と生体工学* 1969; 7: 406-415.
24. Suga H, Sagawa K, Shoukas AA. Load independence of the instantaneous pressure-volume ratio of the canine left ventricle and effects of epinephrine and heart rate on the ratio. *Circ Res* 1973; 32: 314-322.
25. Suga H, Sagawa K. Instantaneous pressure-volume relationships and their ratio in the excised, supported canine left ventricle. *Circ Res* 1974; 35: 117-126.
26. Suga H. Cardiac mechanics and energetics from Emax to PVA. *Frontiers Med Biol Eng* 1990; 2: 3-22.
27. Suga H. Paul Dudley White International Lecture. Cardiac performance as viewed through the pressure-volume window. *Jpn Heart J* 1994; 35: 263-280.
28. Sagawa K, Suga H, Shoukas AA, Bakalar KM. End-systolic pressure-volume ratio; A new index of contractility. *Am J Cardiol* 1977; 40:

748-753.

29. Glower DD, Spratt JA, Snow ND, Kabas JS, Davis JW, Olsen CO, Tyson GS, Sabiston DC, Rankin JS. Linearity of the Frank-Starling relationship in the intact heart. The concept of preload recruitable stroke work. *Circulation* 1985; 71: 994-1009.
30. Little WC, Cheng CP, Mumma M, Igarashi Y, Johansen VJ, Johnston WE. Comparison of measures of the left ventricle contractile performance derived from pressure-volume loops in conscious dogs. *Circulation* 1989; 80: 1378-1387.
31. Krukenkamp IB, Norman NA, Kollmorgen BA, . Preloading history influences pressure-volume-derived indexes of myocardial contractility in the ejecting canine left ventricle. *J Thorac Cardiovasc Surg* 1989; 97: 551-564.
32. Takeuchi M, Odake M, Takaoka H, Comparison between preload recruitable stroke work and end-systolic pressure-volume relationship in human. *Eur H J* 1992; 13 (Supple E): 80-84.
33. Elharrar V, Zipes DP. Cardiac electrophysiologic alterations during myocardial ischemia. *Am J Physiol* 1977; 233: H329-344.
34. Buchanan JW, Saito T, Gettes LS. The effects of antiarrhythmic drugs, stimulation frequency and potassium induced resting membrane potential changes on conduction velocity and dV/dt max in guinea pig myocardium. *Circ Res* 1985; 56: 696-703.

35. 外山淳治、神谷香一郎. 組織レベルでの興奮伝導と再分極. 春見健一、有田 眞、杉本恒明、外山淳治、橋本敬太郎 編. 最新心電学. 東京：丸善、1993: 177-189.
36. Shen AC, Jennings RB. Kinetics of calcium accumulation in acute myocardial ischemic injury. *Am J Pathol* 1972; 67: 441-451.
37. Hearse DJ, Humphrey SM, Bullock GR. The oxygen paradox and the calcium paradox : Two facets of the same problem ? *J Mol Cell Cardiol* 1978; 10: 641-688.
38. Spray DC, White RL, Mazet F, Bennett MVL. Regulation of gap junctional conductance. *Am J Physiol* 1985; 248: H753-764.
39. Jacobus WE, Pores IH, Lucas SK, Kallman CH, Weisfeldt ML, Flaherty JT. The role of intracellular pH in the control of normal and ischemic myocardial contractility. In: Nuccitelli R, Deamer D, ed. *Intracellular pH*. New York: Liss,1989: 537-565.
40. DeMello WC. Intercellular communication in cardiac muscle. *Circ Res* 1982; 51: 1-9.
41. Dahl G, Isenberg G. Decoupling of heart muscle cells: correlation with increased cytoplasmic calcium activity and with changes in nexus ultrastructure. *J Membr Biol* 1980; 53:63-75.
42. Wojtczak J. Contractures and increase in internal longitudinal

- resistance of cow ventricular muscle induced by hypoxia. *Circ Res* 1979; 44: 88-95.
43. Abboud S. The effect of ischemia on the high-frequency potentials. In: El-Sherif N, Turitto G, eds. *High-resolution electrocardiography*. New York: Futura, 1992: 229-337.
 44. Taggart DP, Handjinikolas L, Hooper J, Albert J, Kemp M, Hue D, Yacoub M, Lincoln JC. Effects of age and ischemic times on biochemical evidence of myocardial injury after pediatric cardiac operations. *J Thorac Cardiovasc Surg* 1997; 113: 728-735.
 45. Baan J, van der Velde ET, de Bruin HG, Smeenk GJ, Koops J, van Dijk AD, Temmerman D, Senden J, Buis B. Continuous measurement of the left ventricular volume in animals and humans by the conductance catheter. *Circulation* 1984; 70: 812-823.
 46. Baan J, Jong TT, Kerkhof PL, Moene RJ, van Dijk AD, van der Velde ET, Koops J. Continuous stroke volume and cardiac output from intra-ventricular dimensions obtained with impedance catheter. *Cardiovasc Res* 1981; 15: 328-334.
 47. Katz AM. *Physiology of the Heart* 2nd eds, New York: Raven Press, 1992: 319-350.
 48. Maughan WL, Sunagawa K, Burkhoff D, Graves WL Jr, Hunter WC, Sagawa K. Effect of heart rate on the canine end-systolic pressure-volume relationship. *Circulation* 1985; 72: 654-659.

49. Gaskell WH. On the tonicity of the heart and blood vessels. *J Physiol* (London) 1880; 3: 48-75.
50. Fabiato A, Fabiato F. Effects of pH on the myofilaments and the sarcoplasmic reticulum of skinned cells from cardiac and skeletal muscles. *J Physiol* (London) 1978; 276: 233-235.
51. Solaro RJ, Lee JA, Kentish JC, . Effects of acidosis on ventricular muscle from adult and neonatal rats. *Circ Res* 1988; 63: 779-787.
52. Orchard CH. The role of the sarcoplasmic reticulum in the response of ferret and rat heart muscle to acidosis. *J Physiol* (London) 1987; 384: 431-449.
53. McCall E, Orchard CH. The effect of acidosis on the interval-force relation and mechanical restitution in ferret papillary muscle. *J Physiol* (London) 1991; 432: 45-63.
54. Hata K, Goto Y, Kawaguchi O, Takasago T, Saeki A, Nishioka T, Suga H. Hypercapnic acidosis increases oxygen cost of contractility in the dog left ventricle. *Am J Physiol* 1994; 266: H730-740.
55. Allen DG, Orchard CH. The effects of changes of pH on intracellular calcium transients in mammalian cardiac muscle. *J Physiol* (London) 1983; 335: 555-567.
56. Burkhoff D, Oikawa RY, Sagawa K. Influence of pacing site on canine

- left ventricular contraction. *Am J Physiol* 1986; 251: H428-435.
57. Sugiura S, Hunter WC, Sagawa K. Long-term versus intrabeat history of ejection as determinants of canine ventricular end-systolic pressure. *Circ Res* 1989; 64: 255-264.
 58. Maughan WL, Sunagawa K, Burkhoff D, Effect of arterial impedance changes on the end-systolic pressure-volume relation. *Cir Res* 1984; 54: 595-602.
 59. Fremann GL. Effects of increased afterload on left ventricular function in closed-chest dogs. *Am J Physiol* 1990; 259: H619-625.
 60. Baan J, Van Der Velde ET. Sensitivity of left ventricular end-systolic pressure-volume relation to type of loading intervention in dogs. *Cir Res* 1988; 62: 1247-1258.
 61. Burkhoff D, Sugiura S, Yue DT, Sagawa K. Contractility-dependent curvilinearity of end-systolic pressure-volume relations. *Am J Physiol* 1987; 252: H1218-1227.
 62. 松下昌之助、阿部正一、三井利夫、重田 治、寺田 康、厚美直孝、軸屋智昭、榊原 謙. 心機能と高周波数電位の関連の成立条件の検討. *心臓* 1997; 29 (Supple.6): 33-36.