

animals also fail to show an oestrous rise in potential when given subcutaneous injections of theelin.

One concludes that cornification of the vagina alone will not produce the changes in electrical potential characteristic of normal oestrus or that produced by subcutaneous injections of threshold amounts of theelin, and therefore that it is necessary to have the uterus as well as the vagina take part in the oestrous changes in order to obtain the characteristic type of oestrous potential readings.

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Potential Variations of Extremities and of Precordium in Pericarditis.

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In pericarditis the most conspicuous abnormalities of the ventricular complex of the standard electrocardiogram are early displacement of the RS-T segment and subsequent inversion of the T-wave. It is the generally accepted view that these changes depend upon myocardial damage.¹⁻⁴

With a view to learning more about this problem the extremity and precordial potentials⁵ were studied in 8 cases of pericarditis. The etiology of the pericarditis was rheumatic fever in 3 cases, uremia in 2, tuberculosis in 1, and gonococcus infection in 2.

In neither patient with uremia did the electrocardiograms vary after development of a friction rub. At necropsy, although both showed fibrinous exudate on the visceral pericardium, neither displayed a large effusion or subepicardial myocarditis.

In the remainder, regardless of etiology, the electrocardiographic abnormalities were similar both in the standard and in the special

¹ Wilson, F. N., Hill, I. G. W., and Johnston, F. D., *Am. Ht. J.*, 1934, **10**, 163, 176.

² Van der Veer, J. B., and Norris, R. F., *Am. Ht. J.*, 1937, **14**, 31.

³ Katz, L. N., Feil, H. S., and Scott, R. W., *Am. Ht. J.*, 1929, **5**, 77.

⁴ Herrmann, G., and Schwab, E. H., *Trans. Assn. Am. Phy.*, 1934, **49**, 229.

⁵ Wilson, F. N., Johnston, F. D., Macleod, A. G., and Barker, P. S., *Am. Ht. J.*, 1934, **9**, 447.

leads. During the first week of acute pericarditis, when RS-T was still elevated in Leads I and II, the potential of the right arm showed a negative displacement, and of the left arm a positive displacement of this segment. There was either no deviation of the RS-T or a slight variable one in the lead from the left leg. In the case of the precordial leads this segment was negative in the curve from the right sternal margin, positive or isoelectric in the remaining leads.

During the inscription of the T-wave the potential of the right arm was negative, the potential of the left arm and that of the left leg were variable. In leads from the right side of the sternum the T-wave was always negative and more or less fused with the preceding segment. In the remaining precordial leads it was positive, and in one patient distinctly notched.

In only a few instances were the final ventricular deflections in the special electrocardiograms quantitatively outside normal limits⁶ in the early stages of the disease. The progressive changes that occurred in these over a period of one or 2 weeks, however, confirmed their qualitative abnormality. These changes consisted in the gradual disappearance of RS-T displacement and in modification of the T-wave. In leads from the right arm and from the right sternal margin this deflection changed from negative to positive. In leads from the left side of the precordium it changed from positive to negative or merely became less positive. In the left arm and left leg leads T remained variable.

The myocardial injury responsible for these progressive changes in the final ventricular deflections was not apparently sufficient in degree or extent to cause important changes in the initial ventricular deflections of the extremity or precordial potentials. Considerable pericardial effusion in one case did reduce the amplitude of these deflections.

The results show first, that in pericarditis the final ventricular deflections in electrocardiograms representing the potentials of the extremities and of the precordium vary with the duration of the disease as do the same deflections in the standard leads; and second, that the QRS complex of precordial electrocardiograms is not greatly affected in acute pericarditis, a fact of practical importance in differentiating the disease from certain cases of myocardial infarction.

⁶ Kossmann, C. E., and Johnston, F. D., *Am. Ht. J.*, 1935, **10**, 925.