A NORMOGRAM TO CALCULATE THE ELECTRICAL AXES OF THE HEART

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The estimation of the QRS, P and T wave axes of the heart provides useful information regarding the diagnosis and prognosis of several cardiac disorders including ischaemic and hypertensive heart disease. Accurate estimation of these axes requires a specially designed graph paper and hence could be time consuming.

This study describes the construction of a Normogram, which could be utilised for the estimation of the electrical axes within an accuracy of one degree. The equation for the construction of the normogram is based on

$$\frac{\text{Cos } \phi}{\text{Cos } (60-\phi)} = \frac{X}{Y} = R \qquad \text{.....(1)}$$

Where R = $\frac{\text{voltage of complex in lead I (X)}}{\text{voltage of complex in lead II (Y)}}$

ϕ = Angle of deviation of the electrical axis from the horizontal.

On solving Equation (1)

$$R = \frac{2}{\tan \phi \times 1.7320508 + 1} \quad \text{.....(2)}$$

A complete normogram at 1° increments has been constructed using equation (2). Some of the salient R and ϕ values in the normogram are listed below :

$0° = 2$; $30° = 1$; $60° = 0.5$; $90° = 0$;

$-30° =$ infinity; $-60° = -1$; $-90° = -0$.