CORRELATION BETWEEN Fibrinogen AND Mrss

We conducted a PubMed search using the keywords "Correlation", "Fibrinogen" and "Systemic Sclerosis". According to previous observational studies, the Fibrinogen levels in patients of Ssc are increased, as compared to controls (1–3). However, to our knowledge, a correlation between Fibrinogen levels and mRSS has not been published so far.

Therefore, we decided to broaden our search to include the studies which have mentioned the correlation between levels of Fibrinogen and disease activity in other rheumatological conditions.

STUDY	RHEUMATOLOGICAL CONDITION	CORRELATION BETWEEN	CORRELATION COEFFICIENT (r)
Xue et al (4)	Rheumatoid Arthritis	Fibrinogen Vs DAS 28 CRP	0.422
Yildirim et al (5)	Rheumatoid Arthritis	Fibrinogen Vs DAS 28 CRP	0.650
Wang et al (6)	Rheumatoid Arthritis	Fibrinogen PreAlbumin Ratio Vs DAS 28 CRP	0.739
Arvidson et al (7)	Rheumatoid Arthritis	Fibrinogen Vs Modifed Stanford Health Assessment Questionnaire	0.35
Xu et al (8)	SLE	Fibrinogen Albumin Ratio Vs SLEDAI	0.428
Chen et al (9)	Gout	Fibrinogen Vs Gout Activity Score	0.606
Liu et al (10)	Ankylosing Spondylitits	Fibrinogen Albumin Ratio Vs BASDAI	0.594

Based on the correlation seen in other diseases, we assumed a correlation coefficient of 0.5 for the purpose of calculating a sample size.

CALCULATION

To calculate the sample sizes needed to detect a relevant simple correlation with specified significance level and power, following hypotheses has been used:

HYPOTHESIS

H_0: There is no correlation between the 2 variables i.e., r = 0
H_α: There is a correlation between the 2 variables i.e., r ≠ 0

FORMULA

$$N = \frac{\left(Z_{1-\frac{\alpha}{2}} + Z_{1-\beta}\right)^2}{C_r^{\,2}} + 3$$

Where-

$$C_r = \frac{1}{2} \ln\left[\frac{1+r}{1-r}\right]$$

α = Probability of type I error
β = Probability of type II error
Power = 1 − β
$Z_{1-\alpha/2}$ = Standard normal deviate for given value of α
$Z_{1-\beta}$ = Standard normal deviate for given value of β
r = Correlation based on Previous studies (0.5)

ASSUMPTIONS

α = 5%
β = 20%
Power = 80%
$Z_{1-\alpha/2}$ = 1.96
$Z_{1-\beta}$ = 0.8416
r = 0.5

CALCULATIONS

$$C_r = \frac{1}{2} \ln\left[\frac{1+0.5}{1-0.5}\right] = 0.549$$

$$N = \frac{(1.96 + 0.8416)^2}{0.549^2} + 3$$

Number of subjects in the study should be 29.

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