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The Impact of Lesion Length on Doppler Coronary Flow Reserve in Patients with ischemic heart disease.

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Data on the effects of lesion length on Doppler coronary flow reserve (CFR) in humans is limited. In 39 consecutive pts referred for coronary interventions, we assessed the effects of lesion length (LL) and minimal lumen diameter (MLD) on CFR using a 0.014 inch Doppler guide wire and intracoronary adenosine. Multivessel disease and Prior MI were each present in 57% of pts. Quantitative coronary angiography (QCA) was used, mean MLD was 1.10 ± 0.44 mm, mean % diameter stenosis (DS) $63\pm14\%$ and mean LL 8.8 ± 4.7 mm. CFR in the total cohort was 1.6 ± 0.5. LL correlated inversely with CFR by linear regression (figure 1), while MLD and %DS did not ($r=0.21$, $r=0.14$, $p=ns$) and this correlation was maintained in multivariate regression analysis ($coef=-0.43$, $R2=0.22$, $r=0.48$, $9=0.007$). CFR in severe lesions (MLD $<1mm$) was 1.3 ± 0.3 which is significantly lower than CFR (1.7 ± 0.5) in moderately severe lesions (≥ 1 mm) ($p=0.03$). In severe lesions ($<1mm$), LL did not have an additional impact on CFR, while in lesions ($\geq1mm$) a shorter LL ($<9mm$) predicted a higher CFR ($p=0.02$), as shown in the ANOVA plot (figure 2) Conclusions: 1- Lesion length correlates inversely with CFR. 2- If the degree of lesion severity is accounted for, LL becomes predictive of CFR only in moderately severe lesions ($\geq 1mm$).
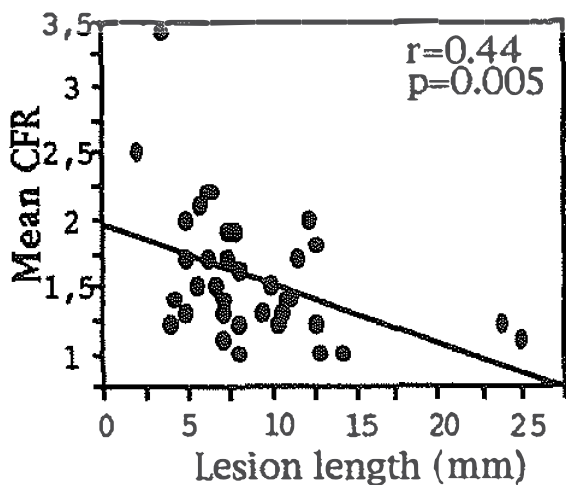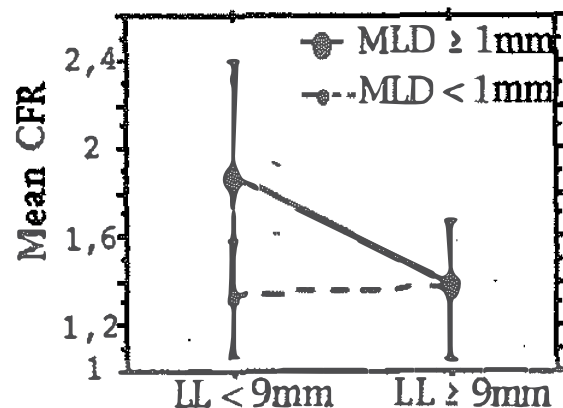

Figure 1

Figure 2