Serum Mac-2 binding protein glycosylation isomer and handgrip strength correlate with serum myostatin level in chronic liver disease

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1 INTRODUCTION

Myostatin belongs to transforming growth factor β (TGF-β) family which has been reported as a key mediator of fibrosis in several organs, and negatively works for differentiation of skeletal muscle cells.

Recent study showed higher myostatin level in liver cirrhosis associated with unfavorable outcome, however, the precise mechanism between high myostatin level and poor prognosis in chronic liver disease is still unknown.

2 AIM

The aim of our study is to elucidate the correlation between serum myostatin level and clinical parameters, especially Serum Mac-2 binding protein glycosylation isomer (M2BPGi) which we reported as predictor of liver fibrosis and hepatocellular carcinoma in previous study.

3 METHOD

162 patients with chronic liver disease and 20 healthy control were enrolled, and serum myostatin level was calculated by ELISA method (GDF-8/Myostatin Quintikine ® ELISA kit).
We measured handgrip strength, and analyzed correlation between serum myostatin levels and clinical parameters.

4 RESULTS

Patients characteristics

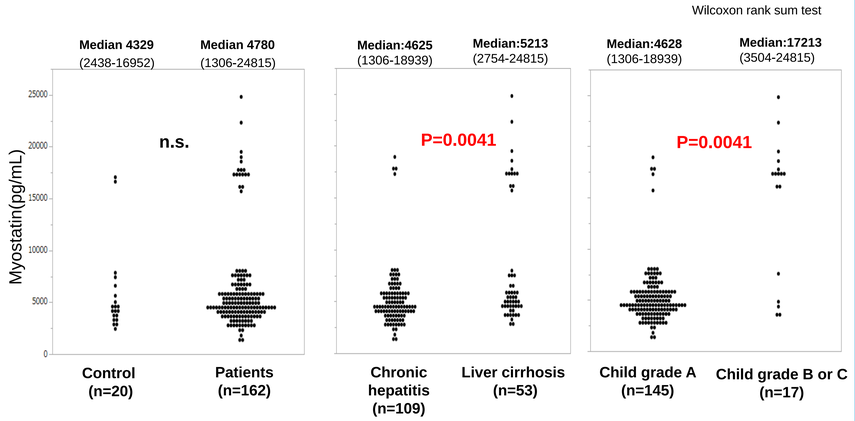
variable	Patients (n=162)	Control (n=20)
Age (year)	66 (29-90)	44 (27-60)
Gender male : female	70 (43): 92 (57)	11 (55): 9 (45)
Child grade A:B:C	145 (90): 13 (8): 4 (2)	
HCV: HBV: Others	92 (57): 54 (33): 16 (10)	
Liver cirrhosis: Chronic hepatitis	53 (33): 109 (67)	
Handgrip strength (kg)	25.0 (7.9-60.4)	
Body weight (kg)	55.0 (35.4-100.0)	
BMI (kg/m^2)	22.5 (15.5-34.4)	
T-Bil (mg/dl)	0.8 (0.3-6.6)	
ALB (g/dl)	4.3 (2.3-5.1)	
Platelet (x10^3)	158 (37-377)	
PT (%)	91.5 (20.9-132.9)	
NH3 (μg/dL) (n=19)	78 (25-183)	
M2BPGi	0.97 (0.18-20)	

Correlation between serum myostatin levels and clinical parameters in entire cohort

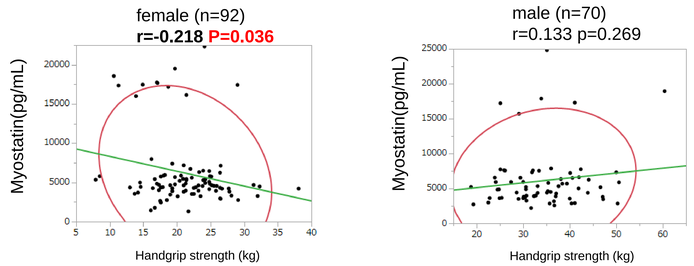
variables	r	Upper 95% CI	Lower 95% CI	P value
Handgrip strength	-0.0299	-0.1832	0.1249	0.7057
Age	0.1328	-0.0218	0.2813	0.092
Body weight	0.137	-0.0176	0.2851	0.0822
Height	-0.0169	-0.1706	0.1377	0.831
BMI	0.1845	0.0312	0.3293	0.0188
M2BPGi	0.615	0.5087	0.7028	**<.0001**
ALB	-0.432	-0.5496	-0.2977	**<.0001**
PT	-0.4553	-0.5699	-0.3234	**<.0001**
T.B	0.4243	0.2891	0.543	**<.0001**
NH3	0.4361	-0.0226	0.7431	0.062
platelets	-0.3461	-0.475	-0.2028	**<.0001**
Child Pugh score	0.5464	0.4283	0.6462	**<.0001**

Association serum myostatin levels and clinical parameter (multiple regression analysis)

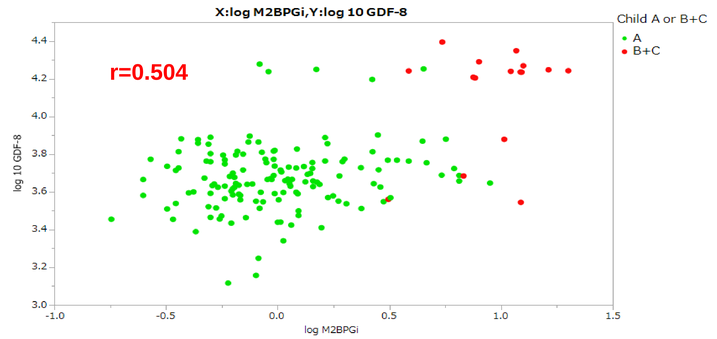
	Univariate		Multivariate
variables	P value		P value
Handgrip strength	0.7075		**0.0187**
Age	0.0920		0.9776
BMI	0.0188		**0.0265**
M2BPGi	<0.0001		**0.0019**
platelets	<0.0001		0.9390
Child Pugh score	<0.0001		**0.0281**



Correlation between serum myostatin levels and handgrip strength



Higher myostatin level and M2BPGi contain individuals with deteriorated liver function



5 CONCLUSIONS

Increased serum myostatin level reflected deteriorated liver function in previous report, and our study revealed similar results in the relationship between myostatin level and liver function.

In addition, we presented M2BPGi and handgrip strength significantly correlated with myostatin level. These interesting results imply high myostatin level in liver disease mirror sarcopenia, severe liver fibrosis and potential of hepatocarcinogenesis.

6 REFERENCES

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