

**Clinical research on serum lipid changes in children with Kawasaki disease and its relationship with coronary artery lesions**

Sirs,

Kawasaki disease (KD), also known as mucocutaneous lymph node syndrome (MCLS), is an acute febrile rash illness in children. It can cause multiple system lesions, among which cardiovascular system is most susceptible, especially the coronary artery lesions (CAL). Therefore, more attention should be paid to this field. The aim of our research was to study the changes of serum lipid and to investigate their relationship with the CAL in KD patients.

A registration and follow-up data bank was set up for KD patients who presented at our hospital. The cohort consisted of 72 patients with KD, registered from January 2010 to June 2013. There were 2 control groups, which include 104 age and sex matched cases of healthy children and 120 age- and sex-matched cases with fever caused by upper respiratory infection. KD were divided into two phases, namely the acute phase of the course within 11 days, the sub-acute phase of 11–21 days.

72 KD patients, average age (2.87±2.27)y, male to female ratio 46/26. The serum lipid profile in different gender and age showed no statistical significance, and the serum lipid profile in the two control groups showed no statistical significance. Compared with controls, the serum TG, LDL-C level in KD patients were higher ( $p<0.05$ ), serum TC, HDL-C and ApoA1 were lower ( $p<0.05$ ), while ApoB100 showed no statistical significance ( $p>0.05$ ). Compared with those in acute phase, the lipid profile of KD children in the sub-acute phase were more or less recovered, in which TG, ApoA1 level recovered significantly ( $p<0.05$ ), while serum TC, HDL-C and LDL-C in the sub-acute and acute phase showed no statistical significance ( $p>0.05$ ). According to the heart color ultrasound examination, 72 KD children were divided into 17 cases of CAL and 55 cases of NCAL. HDL-C levels in CAL group were significantly lower than that in NCAL group ( $p<0.05$ ). Other lipid profiles showed no significant difference ( $p>0.05$ ) (Table I).

Our study showed that obviously abnormal lipid metabolism occurs in both acute and

**Table I.** Serum lipid levels of controls and KD children in the acute and sub-acute phase.

Group	n.	TG (mmol/l)	TC (mmol/l)	HDL-C (mmol/l)	LDL-C (mmol/l)	ApoA I (g/l)	ApoB100 (g/l)
Healthy control	104	1.08±0.32	3.25±0.57	0.82±0.19	2.00±0.23	1.08±0.20	0.77±0.18
Fever control	120	1.20±0.68	3.23±0.54	0.88±0.30	1.96±0.66	1.13±0.24	0.80±0.39
KD acute phase	72	1.75±0.36* <sup>▲</sup>	3.03±0.71 <sup>▲</sup>	0.60±0.24 <sup>▲</sup>	2.17±0.63 <sup>▲</sup>	0.82±0.23* <sup>▲</sup>	0.86±0.27
KD sub-acute phase	72	1.60±0.26 <sup>▲</sup>	3.05±0.67 <sup>▲</sup>	0.68±0.19 <sup>▲</sup>	2.26±0.49 <sup>▲</sup>	0.91±0.17* <sup>▲</sup>	0.84±0.28
CAL acute phase	17	1.72±0.29	3.21±0.42	0.47±0.21 <sup>*</sup>	2.04±0.66	0.73±0.27	0.84±0.30
NCAL acute phase	55	1.76±0.37	2.97±0.77	0.64±0.23 <sup>*</sup>	2.21±0.63	0.84±0.21	0.86±0.27

Triglyceride (TG), Cholesterol (TC), high density lipoprotein (HDL-C), low density lipoprotein (LDL-C), Apo lipoprotein AL (ApoAL), Apo lipoprotein B100 (ApoB100).

\*acute and sub-acute phase comparison  $p<0.05$ .

<sup>▲</sup>comparison with the two control groups  $p<0.05$ .

<sup>\*</sup>comparison between KD patients with CAL and NCAL in acute phase  $p<0.05$ .

sub-acute phase in KD patients. Serum TG was significantly higher and HDL-C was significantly lower than controls, which was consistent with previous studies (1, 2). This study also compares the serum lipid changes in acute phase between patients with CAL and NCAL. We found that the KD children with CAL have lower HDL-C level than that without CAL, which indicated that HDL-C level in acute period of KD maybe one of the protection factor of coronary artery, this result was also consistent with studies of Newburger *et al.* (3, 4), which showed that HDL-C significantly reduced in acute stage in KD patients with CAL, and after the acute phase, HDL-C elevates, but was still lower than the control group.

This study also found that serum TC level was significantly decreased compared with controls, which was similar to the related reports (3, 5). In addition, there was an important finding in this study, high TG, LDL-C and low TC, HDL-C, ApoA I persists in the sub-acute phase in KD children, although TG, ApoA I recover faster than the others. Therefore, we concluded dyslipidaemia may exist in a longer time, which maybe one of the risk factors of coronary lesions. So early detection of serum lipid profile and dynamic monitoring of lipid metabolism may play a positive role in decreasing the incidence of KD complications, it may help us to take measures to reduce the risk of CAL in KD, *e.g.* taking cholesterol-lowering drugs, a low-fat diet, etc. there was also limitation in this study. Besides, this study is limited because it does not track down the lipid level and coronary damage in convalescent phase and even in adulthood. Hopefully we can explore the study in this aspect in the future.

P.-P. ZHANG\*  
Y.-T. LI\*  
X.-F. LI  
L. PAN  
Z.-G. CHEN

\*These authors contributed equally to this study.

Department of Paediatrics, The Third Affiliated Hospital of Sun Yat-Sen University, Guangzhou, China.

Address correspondence to:

Prof. Zhuang-Gui Chen,  
Department of Paediatrics, The Third Affiliated Hospital of Sun Yat-Sen University, Tianhe Road 600, 510630, Guangzhou China  
E-mail: chen\_zhuanggui@126.com

Address reprint requests to: Ping-Ping Zhang

E-mail: zhangpingping82@163.com

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