

Abstract

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Plasma remnant-like lipoprotein particles or LDL-C as major pathologic factors in sudden cardiac death cases.

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BACKGROUND: We have previously reported that the majority of sudden cardiac death (SCD) events were associated with postprandial hyperlipidemia in Japanese subjects.

METHODS: In this investigation, we have compared LDL-cholesterol (LDL-C) and remnant-like lipoprotein particles (RLP) as cardiovascular risk factors in SCD cases, especially in Pokkuri death syndrome (PDS) cases who had nearly normal coronary arteries. To predict the risk of plasma RLP-cholesterol, triglyceride (RLP-C, RLP-TG) and LDL-C in fatal clinical events associated with SCD cases with or without atherosclerosis (PDS), we calculated the cut-off values and likelihood ratio of these lipoproteins from ROC analysis.

RESULTS: Sixty-eight percent of SCD cases were above cut-off value of RLP-C (>12.8mg/dL) versus 32% for control death cases ($P<0.0001$) and the likelihood ratio of RLP-C was 2.12. Significantly higher incidence of RLP-C above cut-off value (>10.1mg/dL) was seen in PDS compared to controls ($P<0.0001$) and the likelihood ratio was 3.13. Similarly, significantly higher incidence of RLP-TG above cut-off values, SCD>53mg/dL and PDS>67mg/dL, was seen compared to controls ($P<0.0001$) and the likelihood ratio was 1.86 and 2.73, respectively. Further, significantly higher incidence of LDL-C above cut-off value (>93mg/dL) was seen in SCD compared to controls ($P<0.0001$) and the likelihood ratio was 1.68. However, the incidence of LDL-C above cut-off value (LDL-C>106mg/dL) was not significantly different between PDS and controls and the likelihood ratio was 1.52.

CONCLUSION: In conclusion, this study has shown high levels of plasma remnant lipoproteins in PDS and that PDS cases did not present with atherosclerotic lesions or elevated LDL-C. In contrast, SCD cases showed high levels of plasma remnant lipoproteins together with elevated plasma LDL-C. Accordingly, we believe that plasma remnant lipoproteins level rather than plasma LDL-C is a major pathologic factor in cardiovascular events.

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