Risk factors for hypertriglyceridemia in intensive care unit (ICU): an exploratory study

J.-C. Devaud [1,6], P. Voirol [1], P. Marques-Vidal [2], N. Rodondi [3], M.M. Berger [4], R. Chiolero [4], L. Tappy [5], A. Pannatier [1,6].

1. Service of Pharmacy, 2. University Institute of Social and Preventive Medicine, 3. Dept of Ambulatory Care and Community Medicine, 4. Service of Intensive Care Medicine & Burns Centre. Centre Hospitalier Universitaire Vaudois (CHUV), Lausanne. 5. Dept of Physiology. University of Lausanne. 6. School of pharmaceutical Sciences. University of Geneva. Switzerland.

Introduction

Despite relevant guidelines recommending a daily fat intake of 0.7-1.5 g/kg/d, hypertriglyceridemia (>2mmol/L) is common among ICU patients. Lack of published data led us to evaluate risk factors for hypertriglyceridemia.

Methods

Patients staying ≥4 days in a mixed adult ICU were enrolled over a seven month period. Pearson's correlations between peak log-triglyceridemia and fat intake (g/kg/d) from enteral, parenteral and propofol emulsion sources as well as doses of propofol (mg/kg/d) were assessed. Correlation was considered as small for coefficients between 0.1 and 0.3 and medium between 0.4 and 0.6. Eight pathologies considered as risk factors were further compared to a control group using Dunnett's test (significant if $p < 0.05$).

Results

Among the 204 patients included, 79 (38.7%) had hypertriglyceridemia even though guidelines for lipid intake were generally followed.

Patients with hepatic dysfunction (F), acute pancreatitis (G), sepsis (H) or dyslipidemia without statin (I) had higher mean triglyceridemia ($p<0.05$) than the control group (A). Patients with cirrhotic ascites (B), diabetes (C), chronic renal failure (D) or statin treatment (E) were similar to the control group. (Fig. 1)

Correlations were modest between peak log-triglyceridemia and propofol regimen or propofol emulsion. Low correlations appeared with fat intake (Table 1).

Table 1: Relationships assessed with Pearson's correlation

Medium correlations with TG	Coefficients
Propofol regimen	0.42
Propofol's emulsion	0.40

Small correlations with TG	Coefficients
Parenteral nutrition	0.27
All lipid intake	0.20
All long-chain triglycerides	0.15
Parenteral LCT	0.20

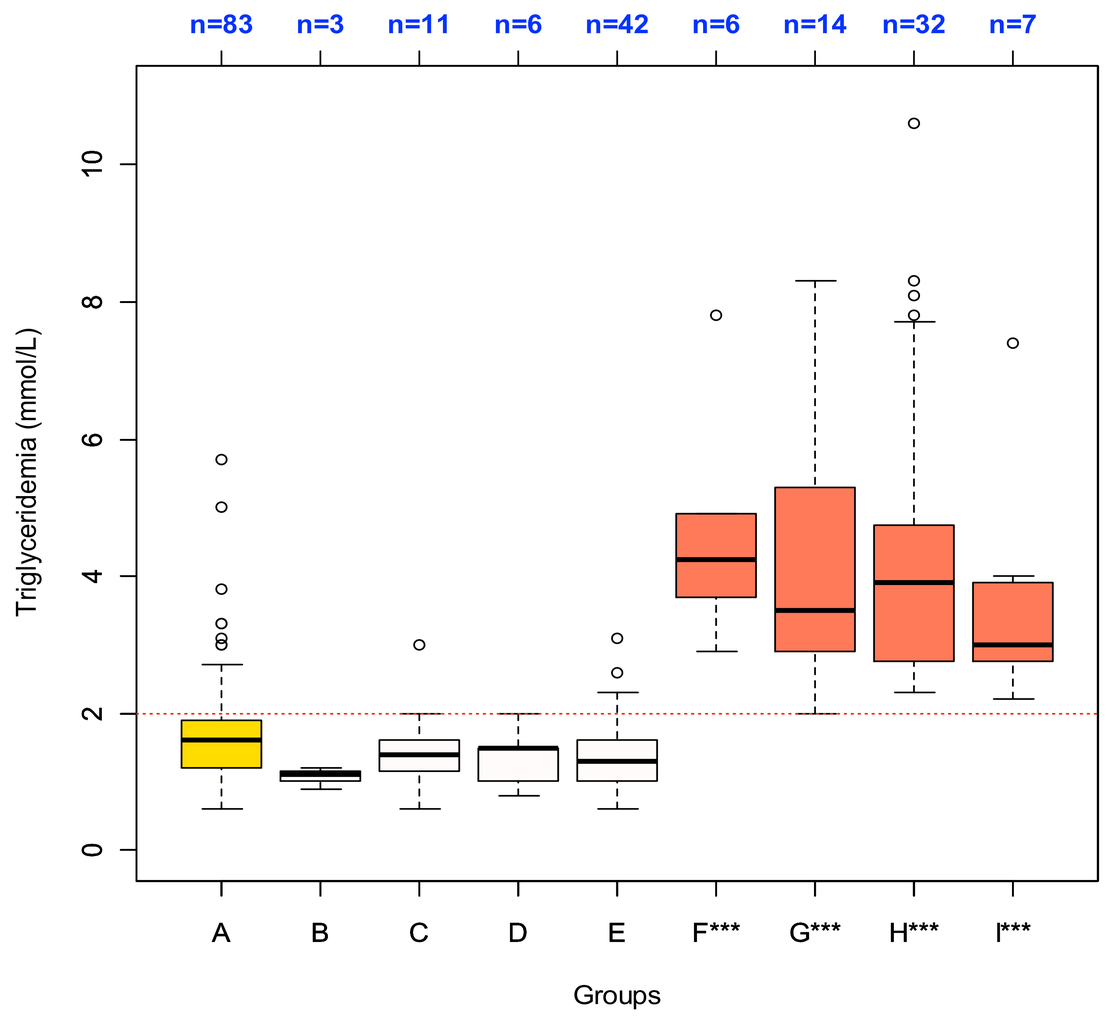

Fig. 1: Boxplots of the different metabolic states

Conclusion

Lipid intake didn't account for hypertriglyceridemia even when guidelines were followed. In contrast, our results suggest that propofol dose regimen (mg/kg/d) and some clinical factors such as hepatic dysfunction, pancreatitis, sepsis, or dyslipidemia may be correlated with hypertriglyceridemia.

References: *1. Clinical Nutrition, 2009, 28 : 387–400 ; 2. Critical care clinics, 2006 , 22 : 151–159 ; 3. Anesthesiology, 2005 , 103 : 860–766*

Contact: Jean-Christophe.Devaud@chuv.ch

Ecole de Pharmacie EPGL Genève – Lausanne

Centre hospitalier universitaire vaudois