Comparison of changes in clinical values of ICU patients at VHS according to various fat emulsions for parenteral nutrition

Juyoung Shin[a], Seokin Seo[b], Soyoung Lim[a], Soyoung Baek[a], Hyokeun Jeong[a]
Department of Pharmacy, Department of General surgery Veterans Health Service Medical Center

BACKGROUND AND PURPOSE

The purpose of this study was to compare the changes in the clinical values of fish oil and non-fish oil-based TPN in critically ill patients and to provide a clinical rationale for TPN administration.

MATERIALS AND METHODS

Data were collected from critically ill patients who received TNA(Fish oil-based or non- Fish oil-based TNA, the latter consisting of olive-soybean oil-based TNA or soybean oil-based TNA) at Veterans Health Service medical center from June 1, 2019 to May 31, 2021.

Albumin, hs CRP, AST, ALT, Total Bilirubin(TB), PT.INR, WBC, Hb, Hct, Platelet (PLT), Lymphocyte(LYT) levels were analyzed.

RESULTS

This study collected 224 subjects (172 fish oil-based TNA, 45 olive soybean oil-based TNA, and 7 soybean oil-based TNA).

The mean changes in hs CRP before and after TNA injection were -8.71, -47.48, and -33.33 in the order of fish oil, olive-soybean oil, and soybean oil.

The albumin level changes were -0.26, +0.05, and -0.03, respectively. Other than that, there was no statistically significant mean value change between groups.

The difference in hs CRP, albumin, Hb and Hct median values was statistically significant between groups.

In the olive-soybean oil group, the decrease in hs CRP showed a tendency to increase as the number of prescription days increased.

Only in the fish oil group, as the APACHE2 score increased, the TB ($p<0.01$) and AST ($p<0.01$) tended to increase, and PLT tended to increase ($p<0.01$).

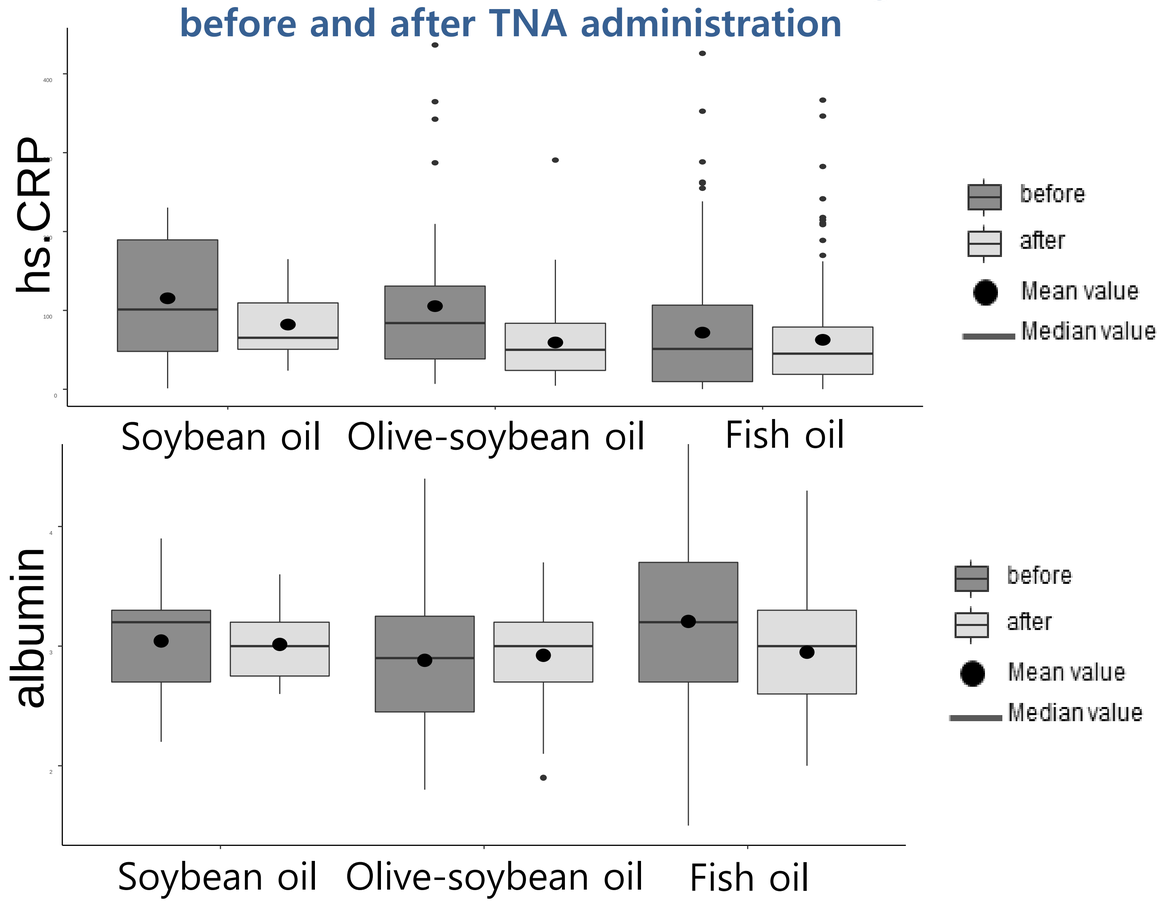
In the olive soybean oil group ($p<0.01$) and soybean oil group ($p=0.037$), the increase in INR tended to increase as the BMI increased.

In the fish oil group, ALT increased with age ($p=0.014$).

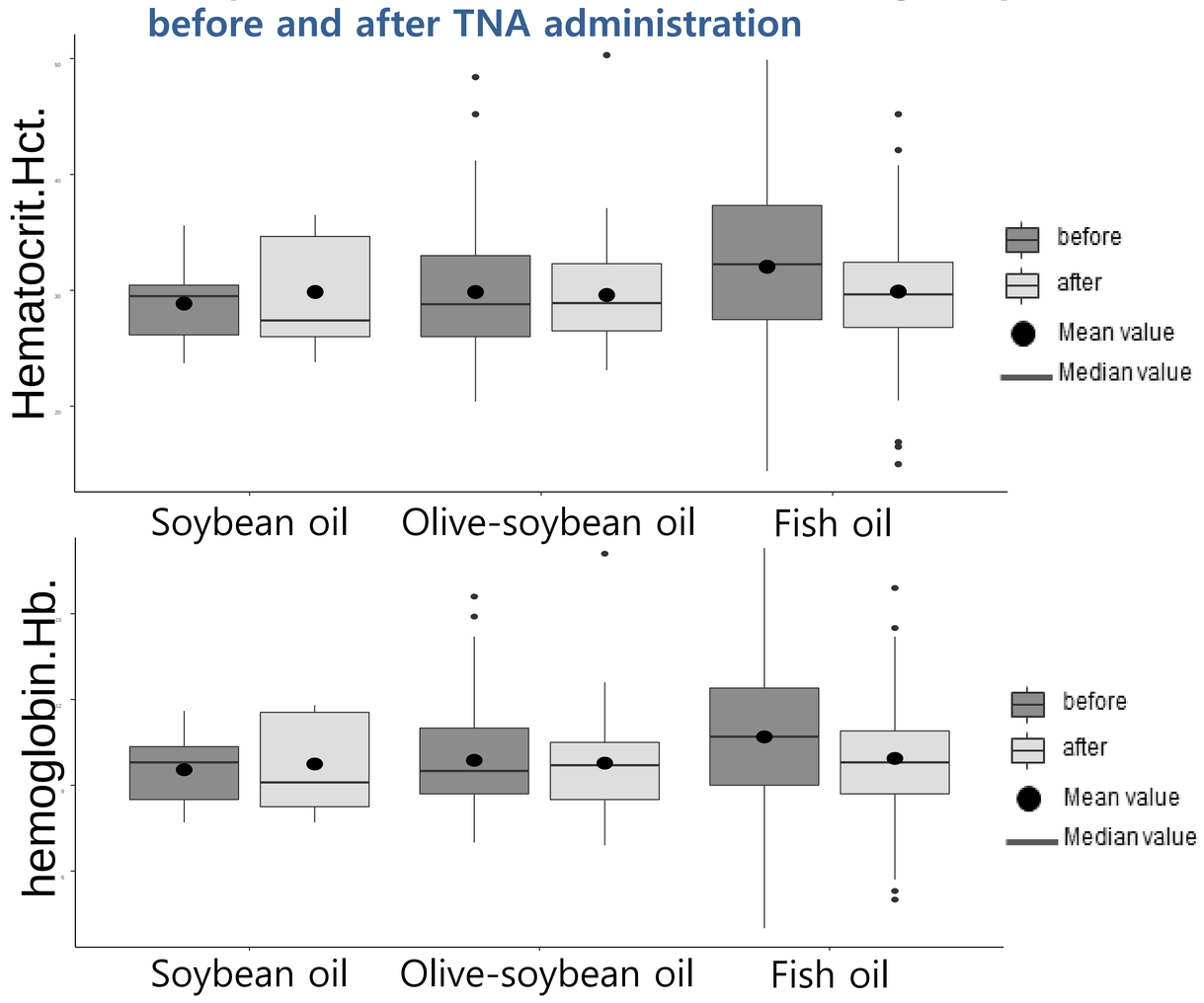
Result 1) Patient characteristics

Variables		Fish oil (N=172)	Olive-soybean oil (N=45)	Soybean oil (N=7)	p value (p<0.05)
Sex	Male	146 (84.88%)	40 (88.89%)	6 (85.71%)	0.853
	Female	26 (15.12%)	5 (11.11%)	1 (14.29%)	
Age		77.94 (± 10.07)	79.82 (± 7.58)	76.29 (± 7.70)	0.43
Height		163.41 (± 7.88)	162.72 (± 7.47)	161.47 (± 6.34)	0.727
Weight		58.68 (± 11.55)	58.11 (± 12.02)	51.24 (± 11.56)	0.253
BMI		21.95 (± 4.05)	21.97 (± 4.31)	19.63 (± 4.23)	0.342
Prescription duration		12.72 (± 8.36)	12.44 (± 8.00)	13.86 (± 5.27)	0.913
APACHE2 score		24.30 (± 8.34)	24.27 (± 7.85)	27.14 (± 11.02)	0.673

Result 2) Comparison of clinical values according to lipid emulsion before and after TNA administration



Result 3) Comparison of blood test values according to lipid emulsion before and after TNA administration



Result 4) Correlation with differences in clinical values between lipid emulsion

Correlation coefficient (P value)		Fish oil (N=205)		Olive-soybean oil (N=50)		Soybean oil (N=7)		
Age	Δ SGPT.alt	0.2 (0.014)	BMI	Δ PT.INR	0.69 (<0.01)	BMI	Δ PT.INR	0.9 (0.037)
APACHE2 Score	Δ total.bilirubin	0.27 (0.002)	prescription duration	Δ hs.CRP	-0.31 (0.045)			
	Δ SGOT.ast.	0.24 (0.003)						
	Δ Platelet	-0.26 (0.001)						

CONCLUSIONS

As a result of the study, there was no significant difference in clinical values between the preparations containing fish oil and the preparations containing non-fish oil except for hs CRP and albumin. Therefore, it is judged that considering the nutritional components and economic feasibility of TNA preparations when administering TNA will be helpful in improving the nutritional status of patients and reducing the economic burden.

4CPS-024

Corresponding author : Juyoung Shin. Department of pharmacy, Seoul Veterans Hospital, Korea VHS 53, Jinhwangdo-ro 61-gil, Gangdong-gu, Seoul, Republic of Korea
E-mail : sjy1004@bohun.or.kr

V06- GENERAL NUTRIENTS