

## Background and Objectives

Hypertriglyceridemia (HiTG) often occurs in infants on parenteral nutrition (PN), especially those with low birth weight (BW). In case of HiTG, the ESPGHAN/ESPEN/ESPR 2018 guidelines recommend an intravenous (IV) lipid (FAT) titration. The consequences of IV FAT titration in small infants are largely unknown.

To investigate the modifications of IV FAT, amino acids (AA), carbohydrates (CHO) and non-protein energy (NPE) intakes in infants with a BW less than 1250g on routine PN who developed HiTG (>250 mg/dL).

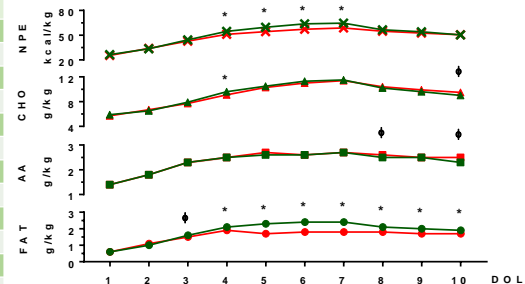
## Methods

We retrospectively reviewed nutrition, growth and neurodevelopment of a cohort of infants with a BW<1250 g consecutively admitted to the "G. Salesi" Children's Hospital between Jan-2004 and Dec-2016 who received routine PN. Patients with and without HiTG were match-paired for BW and gestational age (GA). Paired t-test, Mann-Whitney test, Wilcoxon test or McNemar test were used for the statistical analysis.

## Results

Six hundred and fifty-eight infants of the cohort were analyzed and 196 (30%) had at least one HiTG episode in the first 10 days of life (DOL). One hundred and thirty-six HiTG patients were compared with 136 matched-controls (CNTR, **Table 1**). In the first 10 DOL, IV FAT and NPE, but not IV AA, were significantly lower in HiTG infants (**Figure 1**). The incidence of hyperglycaemia episodes associated with HiTG, was not significantly higher than in CNTR (12% vs 7%, p=0.2). We found no differences between groups in the incidence of the main complications of prematurity. Anthropometry at 36 weeks (W) and at 24 months corrected age (CA), and neurodevelopment at 24Mo CA (HiTG vs CNTR - Cognitive composite score, n=39: 94±13 vs 95±14, p=0.6, Motor composite score, n=22: 100±14 vs 101±11, p=0.8) were also not different.

Table 1	HiTG	CNTR <sup>BW-GA</sup>	Diff.	p
<b>BIRTH DATA</b>				
Birth weight (BW) - g	875±173	877±170	-2±41	0.5
Gestational age (GA) - days	193±15	193±14	-0±1	0.9
Males, no. (%)	69 (51%)	64 (47%)	+5 (+4%)	0.5
SGA <sup>2SDS</sup> , n (%)	15 (11%)	13 (10%)	+2 (+1%)	0.5
Appgar5min - no	8 [7 8]	8 [7 8]	0	0.4
Surfactant therapy- no. (%)	97 (71%)	85 (63%)	+12 (+9%)	0.1
Perinatal steroids-no. (%)	115 (88%)	117 (90%)	-2 (-2%)	0.7
<b>MAJOR DIAGNOSES</b>				
LOS	30 (22%)	36 (26%)	-6 (-4%)	0.4
NEC≥ grade II	8 (6%)	6 (4%)	+2 (+1%)	0.6
Cholestasis	13 (10%)	15 (11%)	-2 (-1%)	0.7
RDS and HMD	124 (91%)	123 (90%)	+1 (+1%)	0.8
BPD	34 (25%)	42 (31%)	-8 (-6%)	0.3
Asphyxia	8 (6%)	7 (5%)	+1 (+1%)	0.8
PDA	89 (65%)	95 (70%)	-6 (-4%)	0.4
PVL II-IV	3 (2%)	6 (4%)	-3 (-2%)	0.3
IVH ≥ grade III	12 (9%)	10 (7%)	+2 (+1%)	0.7
ROP ≥ grade III	2 (1%)	0 (0%)	+2 (+1%)	0.3
<b>GROWTH FOLLOW-UP</b>				
Weight 36W - g	1861±354	1895±343	-34±283	0.2
Weight SDS-36W - no.	-1.91±0.88	-1.81±0.86	-0.10±0.71	0.1
Total Length 36W - cm	42.6±2.5	42.7±2.5	-0.1±2.2	0.7
Total Length SDS-36W - no.	-1.87±0.99	-1.84±0.96	-0.04±0.85	0.7
Head Circ 36W - cm	30.5±1.5	30.6±1.5	-0.1±1.9	0.5
HC SDS-36W - no.	-1.63±1.02	-1.53±1.08	-0.10±1.36	0.4
Weight at 24Mo - g	11627±1759	11562±2184	+65±2564	0.9
WT SDS-24Mo - no	-0.29±1.30	-0.24±1.69	-0.05±1.90	0.9
TL at 24Mo - g	87.5±4.2	86.1±4.6	+1.4±6.0	0.1
TL SDS-24Mo - no	0.72±1.36	0.44±1.46	+0.28±1.82	0.3
HC at 24Mo - g	47.8±1.9	48.0±1.6	-0.2±2.2	0.6
HC SDS-24Mo - no	-1.05±1.56	-0.72±1.24	-0.33±1.78	0.2



**Figure 1** IV intakes in HiTG vs CNTR<sup>BW-GA</sup>. \*p<0.05; †p<0.1. DOL: days of life

## Conclusion

At our institution, HiTG occurred in 30% of VLBW infants and IV FAT titration resulted in a significantly lower IV FAT and NPE intakes. HiTG infants on routine PN had similar growth and neurodevelopment than controls.

## References

- [1] Sinclair R, Schindler T, Lui K, et al. Hypertriglyceridaemia in extremely preterm infants receiving parenteral lipid emulsions. *BMC Pediatr* 2018;18(1):348;
- [2] Lapillonne A, Fidler Mis N, Goulet O, et al. ESPGHAN/ESPEN/ESPR guidelines on pediatric parenteral nutrition: Lipids. *Clinical Nutrition* 2018;

## Disclosure & Author Affiliation

No conflict of interest to disclose.

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