A Case of Propofol Infusion Syndrome at Predicted Concentration 1.8 µg/mL after 3.5h Infusion

Taku ICHIKAWA¹, Keiko OKUYAMA¹, Kotoe KAMATA¹, Kenichi MASUI², Minoru NOMURA¹, Makoto OZAKI¹

1. Department of Anaesthesiology, Tokyo Women's Medical University, Japan 2. Department of Anaesthesiology, Showa University, Japan

BACKGROUND

Proposed risk factors for PRIS¹

- Young age
- Dose ≥ 4 -5 mg/kg/h
- Duration ≥ 48 h
- High fat low carbohydrate intake
- Critical illness
- Mitochondrial fatty acid oxidation inborn errors
- Concomitant catecholamine and steroids

“Atypical” PRIS

- PRIS can develop with doses within the recommended safety limits².
- “Atypical” PRIS cases have been reported more frequently.

There are no reports on actual propofol plasma concentrations in patients developing PRIS.

CASE REPORT: 55 year-old male (88kg, 1.7m, BMI 30.4), Elective awake craniotomy for left frontal glioma

【Medication】 Flunitrazepam, Etizolam 【Past history】 Depression, hypertension, suspected of sleep apnea syndrome

Propofol (TCI) **[µg/mL]** **4-1.8-----1.5-1.7-----**

Table 1: Arterial blood gas analysis

Elapsed time [min]	50	219	339	727	POD1
pH	7.355	7.208	7.234	7.451	7.491
P _a O ₂ [mmHg]	172.7	170.4	314.4	194.2	130.6
P _a CO ₂ [mmHg]	45.1	48.2	50.9	31.7	27.8
HCO ₃ [mmol/L]	25.4	19.4	21.4	21.6	20.8
Base Excess [mmol/L]	-0.3	-8.7	-6.0	-1.6	-1.5
Glucose [mg/dL]	110	250	206	143	121
Lactate [mmol/L]	1.7	10.5	13.0	4.6	1.9

Table 2: Laboratory data

Elapsed time [min]	Pre-op	260	350	470
Propofol plasma concentration [µg/mL]		7.2	3.6	
Creatinine [mg/dL]	0.73	1.22		1
eGFR [mL/min/1.73m ²]	86.7	49.4		61.4
Triglycerides [mg/dL]				265
Urine myoglobin [ng/mL]		138.5		
Creatine kinase [U/L]	67	73		141

DISCUSSION

Differential diagnosis of intraoperative lactic acidosis³

- Shock (septic, cardiogenic, etc.)
- Tissue ischaemia
- Diabetic ketoacidosis
- Drugs (epinephrine, β_2 -agonists, paracetamol, etc.)
- Liver failure
- Subclinical mitochondrial disease

Suggested symptoms for atypical PRIS²

- Dose-dependent (>4 mg/kg/h): cardiac failure, metabolic acidosis, fever, and perhaps hypotension
- Duration-dependent (>48 h): arrhythmia and other ECG changes
- **If any signs of PRIS appear, we should always consider the possibility of PRIS.**
- **Monitoring (serum lactates, potassium, ECG changes and urinary colour) is important.**

CONCLUSION

- PRIS can occur with a relatively low dose, that is a consideration when using propofol in the operating room.
- This is the first report of propofol plasma concentration far exceeding the estimated level following PRIS onset.

REFERENCES

1. J Intensive Care Med. 2011;26(2):59-72.
2. Crit Care. 2015 Nov 12;19:398.

3. Mayo Clin Proc. 2013 Oct;88(10):1127-40.