Risk of CIDP relapse by body mass index (BMI): a sub-analysis from the PATH and open-label extension (OLE) studies

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Introduction

- Chronic inflammatory demyelinating polyneuropathy (CIDP) is a neurological disorder characterized by abnormalities in motor and sensory nerves[1]
  - Patients usually present with weakness and numbness or tingling in the limbs[1]
  - CIDP typically follows a progressive course with some patients experiencing a relapsing-remitting disease course[1]
- The Polyneuropathy and Treatment with Hizentra (PATH) study was the largest study to investigate subcutaneous immunoglobulin (SCIg) for CIDP treatment and was shown to be efficacious as a maintenance treatment for CIDP[2]
  - Based on the PATH study findings, SCIg was approved in the US for maintenance therapy in adult patients with CIDP in 2018[1,2]
- The European Academy of Neurology/Peripheral Nerve Society (EAN/PNS) have recently published updated guidelines for the management and treatment of patients with CIDP[3]
  - Notably, SCIg is now recommended as a first-line treatment option for maintenance therapy in adult patients with CIDP[3]
  - Patients stabilized on intravenous immunoglobulin (IVIg) may opt to transition to SCIg for reasons such as reduction in systemic adverse events, home self-administration, or personal preference[3]
- Data on the optimal dosing regimen in overweight and obese patients are lacking. The impact of a patients' body weight on dosing requirements is unknown

Objective

To assess the impact of body mass index (BMI) on CIDP relapse rates and relapse risk reduction in patients receiving SCIg therapy using data obtained from the PATH study and its open-label extension (OLE)[2,4]

Methods

PATH study

- Patients (n=172) received a weekly dose of either 0.2 g/kg (n=57) or 0.4 g/kg (n=58) bodyweight of a 20% SCIg solution (IgPro20) or placebo (n=57) for 24 weeks

PATH OLE study

- Eligible patients (n=82) could receive 0.4 g/kg for 24 weeks and be switched to 0.2 g/kg for an additional 24 weeks (if clinically stable); or
  - Due to a protocol amendment, patients could receive 0.2 g/kg and be up-titrated to 0.4 g/kg in the case of CIDP relapse

PATH post-hoc analyses

- For the PATH data, CIDP relapse status (defined as a 1-point increase in the adjusted Inflammatory Neuropathy Cause and Treatment [INCAT] disability score) was stratified by patient BMI (lean [<25 kg/m^2], overweight [≥25–<30 kg/m^2], and obese [≥30 kg/m^2]) to compare relapse status and the reduction in relapse risk in each BMI category
- Due to the study design of the OLE, most patients received both 0.2 and 0.4 g/kg doses; as their time on each dose differed, relapse rates (no. of relapses/weeks on treatment) were determined as the most appropriate parameter for comparison of the OLE data
- The relative risk versus placebo was calculated for each BMI category in the PATH study on an exploratory basis

Results

PATH study

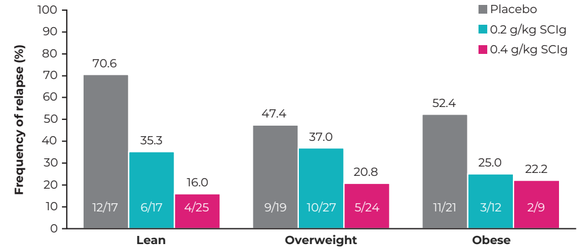
- Of the 172 patients in the PATH study, patients were categorized as (**Table 1**):
  - **Lean;** n=59 (17 received 0.2 g/kg SCIg, 25 received 0.4 g/kg SCIg, and 17 received placebo)
  - **Overweight;** n=70 (27 received 0.2 g/kg SCIg, 24 received 0.4 g/kg SCIg, and 19 received placebo)
  - **Obese;** n=42 (12 received 0.2 g/kg SCIg, 9 received 0.4 g/kg SCIg, and 21 received placebo)
- There was imbalance in BMI distribution between the treatment groups, with most obese patients receiving placebo, likely attributable to chance and small patient numbers
- Fewer patients relapsed on SCIg (both doses) compared with placebo across all BMI categories (**Figure 1**)
- The relative risk (RR) of CIDP relapse was lower in all SCIg-treated patients compared with placebo – however, the RR was lowest in lean patients receiving the 0.4 g/kg dose (**Figure 2**)

Table 1: PATH study – BMI summary statistics by treatment group

	Treatment group	N	Minimum	Mean	Maximum
Lean, n=59[†] (<25 kg/m^2)	Placebo	17	18.4	23.2	24.9
	0.2 g/kg SCIg	17	21.0	23.2	24.8
	0.4 g/kg SCIg	25	17.6	21.6	24.9
Overweight, n=70 (≥25–<30 kg/m^2)	Placebo	19	25.1	27.7	29.8
	0.2 g/kg SCIg	27	25.1	27.0	29.8
	0.4 g/kg SCIg	24	26.1	28.0	29.9
Obese, n=42 (≥30 kg/m^2)	Placebo	21	30.1	33.1	41.6
	0.2 g/kg SCIg	12	30.3	35.0	45.1
	0.4 g/kg SCIg	9	30.9	34.9	49.4

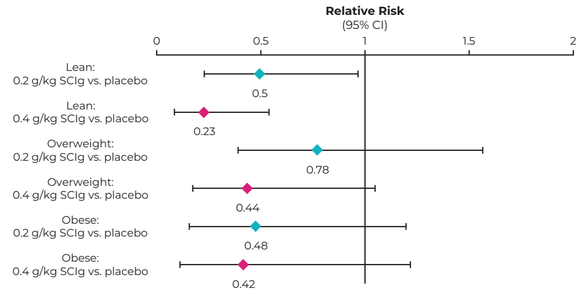
[†]Due to small numbers, underweight patients were included in the lean category. One patient had incomplete BMI data so has been excluded from further analyses. BMI, body mass index; SCIg, subcutaneous immunoglobulin.

Figure 1: PATH study – CIDP relapse status by BMI category



White text provides the number of relapses within each treatment group categorized by BMI.
Due to small numbers, underweight patients were included in the lean category. One patient had incomplete BMI data so has been excluded. BMI, body mass index; CIDP, chronic inflammatory demyelinating polyneuropathy; SCIg, subcutaneous immunoglobulin.

Figure 2: PATH study – relative risk of CIDP relapse



Due to small numbers, underweight patients were included in the lean category. CIs were unadjusted based on the score method. CI, confidence interval; CIDP, chronic inflammatory demyelinating polyneuropathy; SCIg, subcutaneous immunoglobulin.

PATH OLE study

- Of the 82 patients in the PATH OLE, patients were categorized as:
  - **Lean;** n=27
  - **Overweight;** n=38
  - **Obese;** n=16
- During the OLE, fewer patients relapsed on 0.4 g/kg SCIg compared with 0.2 g/kg SCIg across all BMI categories (**Table 2**)
  - With a dose of 0.2 g/kg SCIg, 35 patients relapsed (56.0% lean; 37.5% overweight; 60% obese)
  - With a dose of 0.4 g/kg SCIg, 8 patients relapsed (3.8% lean, 20.0% overweight, 6.7% obese)
- No differences were observed in overall CIDP relapse rates between patients categorized as lean, overweight, or obese patients (0.013, 0.013, and 0.016, respectively) (**Table 3**)
- Relapse rates were lower in patients treated with 0.4 g/kg SCIg compared with 0.2 g/kg SCIg across all BMI categories (**Table 3**)

Table 2: PATH OLE study – CIDP relapse status by BMI category

	Overall relapse, n=41 (%)	Relapse on 0.2 g/kg SCIg, n=35 (%)	Relapse on 0.4 g/kg SCIg, n=8 (%)
Lean, n=27[†] (<25 kg/m2)	14/27 (51.9)	14/25 (56.0)	1/26 (3.8)
Overweight, n=38 (≥25–<30 kg/m^2)	17/38 (44.7)	12/32 (37.5)	6/30 (20.0)
Obese, n=16 (≥30 kg/m^2)	10/16 (62.5)	9/15 (60.0)	1/15 (6.7)

[†]Due to small numbers, underweight patients were included in the lean category. One patient had incomplete BMI data so has been excluded. BMI, body mass index; CIDP, chronic inflammatory demyelinating polyneuropathy; OLE, open-label extension.

Conclusion

- **Both 0.2 g/kg and 0.4 g/kg SCIg doses were effective across all BMI categories**
- **CIDP relapse risk was lowest in patients receiving 0.4 g/kg SCIg compared with those receiving 0.2 g/kg SCIg**
- **PATH OLE data showed no discernible difference in relapse rates suggesting that BMI does not play a role in CIDP relapse risk**

Risk reduction in the PATH study

- A greater reduction in relapse risk was observed with 0.4 g/kg compared with 0.2 g/kg in the PATH study (**Table 4**)

Table 3: PATH OLE study – CIDP relapse rates

	Overall (relapses/weeks on treatment)	0.2 g/kg SCIg (relapses/weeks on treatment)	0.4 g/kg SCIg (relapses/weeks on treatment)
Lean, n=27[†] (<25 kg/m2)	0.013 (15/1172.6)	0.033 (14/428.3)	0.001 (1/718.1)
Overweight, n=38 (≥25–<30 kg/m^2)	0.013 (19/1491.1)	0.019 (12/636.6)	0.008 (7/829.1)
Obese, n=16 (≥30 kg/m^2)	0.016 (11/690.3)	0.040 (9/224.0)	0.004 (2/446.9)

[†]Due to small numbers, underweight patients were included in the lean category.
CIDP, chronic inflammatory demyelinating polyneuropathy; OLE, open-label extension; SCIg, subcutaneous immunoglobulin.

Table 4: PATH study – CIDP risk reduction by BMI category

	PATH study	
	0.2 g/kg SCIg compared with placebo, (%)	0.4 g/kg SCIg compared with placebo, (%)
Lean[†] (<25 kg/m^2)	35.3	54.6
Overweight (≥25–<30 kg/m^2)	10.4	26.6
Obese, (≥30 kg/m^2)	27.4	30.2

[†]Due to small numbers, underweight patients were included in the lean category. BMI, body mass index; CIDP, chronic inflammatory demyelinating polyneuropathy; OLE, open-label extension; SCIg, subcutaneous immunoglobulin.

References

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A virtual version of this poster can be accessed via the QR code.

Author Disclosures

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