Glucocorticoid Exposure and the Risk of Serious Infections in CIDP

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INTRODUCTION

- Chronic inflammatory demyelinating polyneuropathy (CIDP) is a heterogeneous, immune-mediated peripheral neuropathy characterized by motor and sensory nerve demyelination.[1]
- As an autoimmune condition, CIDP may increase patients' risk of infections.[2,3]
- Oral corticosteroids (OCS) are commonly used to manage CIDP but are associated with adverse effects, including infections, diabetes, and osteoporosis.[4]
- The magnitude of risk associated with increasing dosages of OCS over time among those with CIDP, remains unclear.
- This study aimed to assess the link between OCS use and the risk of serious infections in patients with CIDP, providing valuable insights into the risk–benefit profile of glucocorticoid therapy.

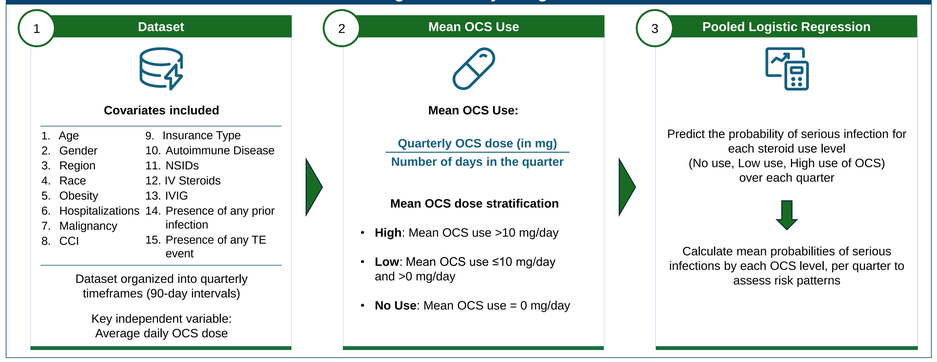
OBJECTIVE

- To compare the incidence of serious infections among patients with CIDP with varying OCS dose exposures, accounting for potential confounders using marginal structural and standard regression models.

METHODS

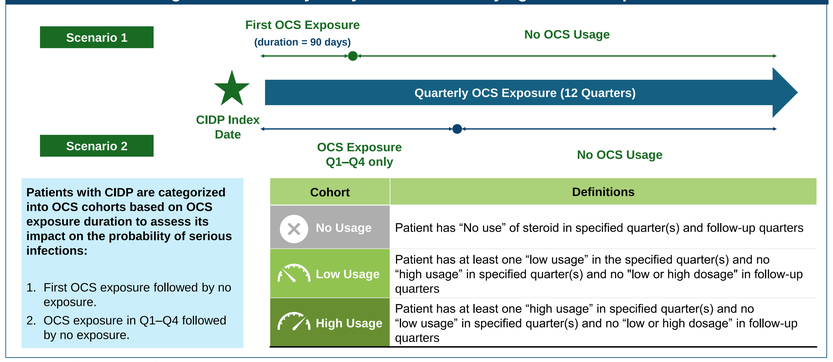
- The Komodo Health claims database (January 2016–March 2024), including medical and prescription claims from >150 payers across all US regions, was used for the analysis.
- Patients were required to have ≥ 2 CIDP diagnosis (ICD-10 G61.81) claims (≥ 30 – ≤ 365 days apart [first claim considered as index date]), ≥1 nerve conduction test (after index date or before another CIDP diagnosis, or ≤ 90 days before the index date), and continuous enrollment 1 year pre-index date
- Pooled logistic regression was used to estimate the probability of developing a serious infection (an infection which resulted in an ED visit or hospitalization) in relation to OCS usage **(Figure 1)**.
- The study also evaluated the impact of alternative OCS exposure scenarios on cumulative serious infection probability **(Figure 2)**.

Figure 1. Study design



CCI, Charlson Comorbidity Index; IV, intravenous; IVIG, intravenous immunoglobulin; NSIDs, nonsteroidal immunomodulatory drugs; OCS, oral corticosteroids; TE, thromboembolic event.

Figure 2. Sensitivity analysis to assess varying levels of exposure



CIDP, chronic inflammatory demyelinating polyneuropathy; OCS, oral corticosteroids; Q1, quarter 1; Q4, quarter 4.

RESULTS

Patient baseline characteristics

Table 1. Baseline characteristics

Covariates	No use	Low OCS use	High OCS use
Demographics			
Total observations	**37144**	**5870**	**2450**
Mean age, years	60	59	57
Gender, %			
Female	42	48	39
Male	58	52	61
Race, %			
Black or African American	7	8	9
Hispanic or Latino	6	6	5
White	67	69	65
Asian or Pacific Islander	2	2	2
Other	3	4	4
Unknown	14	13	16
Clinical			
Average number of hospitalizations at baseline, n (%)	2.67 (7)	3.23 (7)	2.72 (10)
Mean baseline CCI	1.99	2.17	2.18
Daily OCS dose, mean (SD)	0.00 (0)	3.46 (2.56)	26.74 (21.13)
Insurance status, %			
Commercial	49	50	56
Medicare	39	37	29
Medicaid	6	5	7
Unknown	1	0	0
Exchange	6	8	8
Treatment and Clinical			
Malignancy at baseline, %	15	17	18
Baseline autoimmune disease, %	30	39	35
Presence of NSIDs, %	5	13	18
Presence of IV Steroids, %	14	23	16
Presence of any infection, %	2	4	6

CCI, Charlson Comorbidity Index; IV, intravenous; NSIDs, nonsteroidal immunomodulatory drugs; OCS, oral corticosteroids.

- Overall, 6,305 individuals were identified as having CIDP based on our inclusion/exclusion criteria.
- The high OCS use group had a higher proportion of men compared to the low OCS use group.
- Black/African Americans were the only racial group that showed an increase in proportion from no use to high use **(Table 1)**.
- Patients in the low use group experienced a higher average number of hospitalizations compared to other groups.
- Patients in the low and high use groups had higher Charlson Comorbidity Index (CCI) scores than patients in the no use group.
- The high use group had an average daily dose greater than 20 mg, while those in the low use group had an average daily dose close to zero.
- Patients in the high use group were more likely to have commercial insurance than patients in the low use group **(Table 1)**.
- The presence of autoimmune diseases were higher in patients taking OCS.
- The proportion of patients with an infection increased from no use to high use **(Table 1)**.

Risk of serious infections

Table 2: Risk of serious infections with OCS use

Covariates	OR[a]	95% CI	*P*-Value
Low OCS use	1.51	1.16 – 1.95	0.002
High OCS use	1.62	1.19 – 2.18	0.002

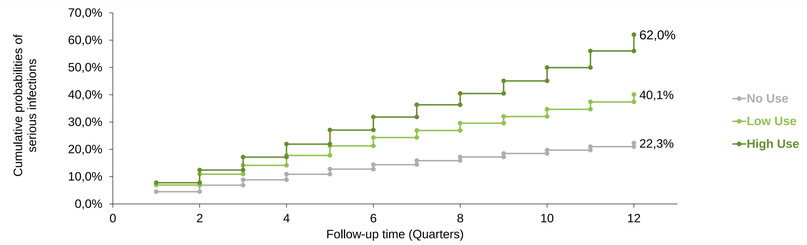
[a]OR >1 indicated increased risk, and QR <1 indicates decreased risk.
CI, confidence interval; OCS, oral corticosteroids; OR, odds ratio.

- Patients with low steroid use had 51% higher odds of developing a serious infection compared to patients with no steroid use (*P* = 0.002) **(Table 2)**.
- Patients with high steroid use had 62% higher odds of having a serious infection compared to patients with no steroid use (*P* = 0.002) **(Table 2)**.

Serious infection risk in patients with CIDP using OCS

- Cumulative probability analysis showed that by Quarter 12, 62.0% of the high use group experienced a serious infection, with an accelerating risk from Quarters 6 to 12, marked by a 30.1%-point increase **(Figure 3)**.
- In comparison, serious infection risks by Quarter 12 were lower in the low use (40.1%) and no use (22.3%) group.

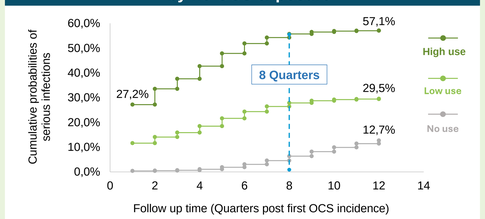
Figure 3. Cumulative mean probabilities of serious infections



Sensitivity analysis: alternative OCS exposure durations and infection risk

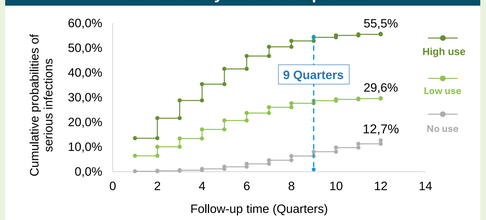
- The cumulative probabilities of developing serious infections were similar across different OCS exposure groups.
- Most patients had an average days of supply of 25 days, indicating that the majority underwent a month-long course of OCS during the study period **(Figures 4 and 5)**.
- Patients with CIDP who received a single high-dose of OCS exposure at the beginning of follow-up experienced a similar cumulative probability of serious infection at the end of 12 quarters as those exposed over a longer duration.

Figure 4. OCS exposure ≤90 days followed by no OCS exposure



OCS, oral corticosteroids.

Figure 5. OCS exposure in Q1–Q4 from CIDP Index followed by no OCS exposure



CIDP, Chronic Inflammatory Demyelinating Polyneuropathy; OCS, oral corticosteroids; Q1, quarter 1; Q4, quarter 4.

SUMMARY

- Low OCS use was associated with increased risk of serious infections, with risk increasing as dosage and duration increased.
- Patients with sustained OCS exposure over time had a significantly greater likelihood of developing serious infections.
- Patients who received a single high-dose of OCS at the beginning of follow-up experienced a similar cumulative probability of serious infection as those exposed over a longer duration.
- Given the infection risks even at low doses, alternative treatment strategies or risk mitigation approaches may benefit patients with CIDP.

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DISCLOSURES:

Cécile Blein, Jana Podhorna and Jeffrey Guptill are employees of argenx and may hold stock or stock options in the company. Charlotte Ward, Rahul Malik, Divya Nagpal and Shreyas Jarmale are employees of ZS Associates and may hold stock or stock options in the company.

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REFERENCES:

1. Querol L, et al. *J Peripher Nerv Syst*. 2023;28(2):276–85.
2. Rajabally YA, et al. *Muscle Nerve*. 2021;64(6):657–61.
3. Doneddu PE, et al. *Eur J Neurol*. 2020;27(1):136–43.
4. Van Lieverloo GG, et al. *J Neurol*. 2018;265:2052–9.