Analysis of a practice change to reduce overall infusion time with a 10% intravenous immunoglobulin product

Kimberly Jones, RN[1], Amy Mulgrew, RN, CRNI, IgCN®, VA-BC[1]

[1]Advanced Infusion Care, Valdosta, GA, USA

KEDRION BIOPHARMA

BACKGROUND

This organization, a specialty pharmacy provider, has traditionally followed a practice of increasing intravenous immunoglobulin (IVIG) infusion rates every 30 minutes.

To accommodate patient preferences and changing health care reimbursement practices, this specialty pharmacy provider reevaluated this infusion practice to explore the possibility of reducing the overall infusion time per patient and to identify more cost-effective and safe options for IVIG administration.

The FDA-approved prescribing information for one 10% liquid IVIG formulation specifies an initial infusion rate of 0.5 mg/kg/min (0.005 mL/kg/min) for 15 minutes followed by maintenance infusion rates that may be gradually increased every 15 minutes to a rate of 8 mg/kg/min (0.08 mL/kg/min), if tolerated.[1] This protocol applies to patients 2 years or older with primary immunodeficiency (PI) or adults with idiopathic thrombocytopenic purpura (ITP) who are not at risk of renal dysfunction, thrombotic events, or volume overload.[1]

Accordingly, this specialty pharmacy provider changed the infusion practice with this IVIG product to allow infusion rate increases every 15 minutes instead of the previous 30-minute interval.

PURPOSE

- To identify the overall tolerability and safety of this 10% IVIG product using a shorter 15-minute rate escalation protocol and collect patient satisfaction data with this change
- To evaluate the impact of this practice change on average infusion time per patient and associated cost of nursing services

METHODS

This was a retrospective review of patient records over a six-month period.

Infusion rates of Gammaplex® 10% were increased every 15 minutes, decreasing the interval for rate increase from 30 minutes, with an escalation up to a maximum rate of 0.08 mL/kg/min.[1]

Adult patients previously on this IVIG product were included in this analysis. Patients were excluded from the practice change and analysis if they were receiving IVIG for the management of gastrointestinal motility issues and/or had three or more comorbidities that put them at risk of infusion rate–related adverse events.

At the conclusion of each infusion, patients were asked to indicate if they were satisfied with the change to shorter infusion times.

The total time of IVIG infusion was recorded for each patient at each visit.

Total infusion times between the last pre-transition IVIG infusion (30-minute intervals) and the post-transition IVIG infusion (15-minute intervals) were compared.

The cost associated with infusion nursing time was calculated at an average rate of $55.00/hour.

LIST OF ABBREVIATIONS

FDA: Food and Drug Administration
ITP: idiopathic thrombocytopenic purpura
IVIG: intravenous immunoglobulin
PI: primary immunodeficiency

Reference

1. GAMMAPLEX® [package insert]. Elstree, United Kingdom: Bio Products Laboratory Limited, a Kedrion company; 2021.

RESULTS

Patient Population

A total of 13 patients were included in this analysis (**Table 1**), which represents a transition experience of 70 infusions with the study 10% IVIG product over the six-month study period. Patients ranged in age from 43 to 78 years (mean: 63.8) and body weights ranged from 47.63 to 106.59 kg (mean: 74.0) at the first IVIG dose on the accelerated 15-minute rate escalation period.

IVIG Infusion Rates and Durations of Infusions

After transitioning to the 15-minute rate escalation protocol, patients' mean times for IVIG infusion were reduced by at least 15 minutes and up to 65 minutes (**Table 1**).

Across all patients, the mean IVIG infusion time was reduced by 41.7 minutes per infusion after transition to the 15-minute rate escalation protocol.

Table 1. Patient-Level Summary of Transition From 30-Minute to 15-Minute Interval for Acceleration of IVIG Infusion Rate

Patient	IVIG Treatment After Transition to 15-Minute Interval Infusion Practice					IVIG Infusion Times (minutes)		Reductions in IVIG Infusion Time (minutes)
	Dosage	Frequency (weeks)	Consecutive Days Per Infusion	# Visits	# Infusions	Last Pre-transition IVIG Infusion	Post-transition IVIG Infusions (mean)	Mean
1	30 g/300 mL	3	1	9	7	170	129	38.5
2	30 g/300 mL	4	2	6	>12	183	129.4	53.6
3	30 g/300 mL	2	1	11	>12	178	120.2	55.1
4	25 g/250 mL	3	3	9	>12	150	117.9	32.1
5	20 g/200 mL	4	4	6	9	115	100	15
6	35 g/350 mL	3	4	7	2	135	120	15
7	90 g/900 mL	5	5	6	>12	285	225	60.6
8	35 g/350 mL	4	4	7	1	150	121.7	28.3
9	20 g/200 mL	4	4	6	>12	170	132.8	33.2
10	40 g/400 mL	4	4	6	>12	185	120	65
11	30 g/300 mL	4	4	6	>12	180	128	52
12	45 g/450 mL	6	6	2	>12	195	140	55
13	50 g/500 mL	4	4	3	4	170	140	30
Overall (mean)	-	-	-	-	-	**174.3**	**132.6**	**41.7**

Tolerability and Patient Satisfaction

Eleven of 13 patients reported no adverse experiences. Two patients (15.4%) each reported a single adverse experience (rash or headache) across 70 infusions (2.9% incidence).

Patients reported they were satisfied with the new, shorter infusion time for 68 of the 70 infusions.

Over the course of the six-month evaluation, one patient was discontinued due to complaints of a headache (noted above), and one patient was discontinued due to physician order to discontinue IVIG therapy entirely.

Included in the standard order template for IVIG for this specialty pharmacy provider is a set of premedications that includes acetaminophen and diphenhydramine. Of the 13 patients reported here, 12 received premedications.

Implications for Nursing Time

The mean reduction of 41.7 minutes (23.9% per visit) in IVIG infusion time with transition to the 15-minute rate escalation protocol translates into a reduction of $38.22 per visit in the cost of nursing services.

DISCUSSION

Reduction in infusion time may have a significant impact on nursing costs, patient quality of life, and infusion rate–related adverse event occurrence.

Patients transitioned per the new infusion practice tolerated the change well and expressed overall satisfaction with the reduced infusion time required.

This analysis indicates the change in infusion practice resulted in well-tolerated and shorter infusion times, which may have a potentially positive impact on patient quality of life as well as health care resource utilization.

CONCLUSIONS

The practice change for infusion of this 10% IVIG product with a 15-minute rate escalation protocol resulted in shorter infusion duration for all patients and was well tolerated.

Reduction in IVIG infusion time may allow greater flexibility in nursing time and provides an opportunity for cost savings.

Contact Information for Investigator
Kimberly Jones, RN
Clinical Trial Lead and Liaison
Advanced Infusion Care, Valdosta, GA, USA
502-649-0002; kjones@aiscaregroup.com

Acknowledgements and Disclosures
Kedrion Biopharma Inc. provided funding for medical writing and editorial support of this poster.
K. Jones and A. Mulgrew are employees of Advanced Infusion Care.

Presented at the National Home Infusion Association (NHIA) Annual Conference, March 23 - 27, 2024, Austin, TX