Introduction

Diseases requiring Ig therapy are often described as rare, and although these diseases are already described in the medical literature, there is no comprehensive and well-characterized portrait available for primary immune deficiencies and certain other immun-mediated neurological disorders. There is increasing recognition that the availability of clinical trial data, collected from highly specialized research settings, does not necessarily translate for non-responding-improving outcomes to "real-world" clinical settings. Indeed, recent studies suggest that despite the existence of national and international treatment guidelines, the care and outcomes of subjects requiring Ig therapy vary substantially across the U.S., and many subjects may not be receiving recommended care.

The Immunoglobulin Diagnosis, Evaluation, and key Learnings (IDEaL) Patient Registry collects longitudinal information on subjects receiving Ig replacement therapy from Coram Specialty Infusion Services in an alternate care setting. The goal of the Registry is to examine data from real-world subjects on Ig therapy, including information related to diagnostic, dosing, and therapy tolerance. This data is analyzed to look for trends in patient demographics, as well as therapy and outcomes. Here we review Registry results from three years of data collection for primary immuno-deficiency (PID) patients, including data from 18-month quality of life survey time points.

Methods

The study has 139 participating investigators across the U.S. Subjects eligible to participate were those referred by their treating physicians. Subjects were consented and since they were enrolled, patient treatment information from prior to 2010 onward was made available in the Registry database. Patient information included initial referral documentation, nurse visit records for infusions, and pharmacist follow-up progress reports. Additionally every six months, SF-36 and Life Quality Index Questionnaire (LQIQ) was mailed to the subjects to track their physical and mental health.

Results

For the data analyzed here, our enrolled subject population was 254 subjects diagnosed with a primary immunodeficiency.

Gender and Age Breakdown

In the enrolled immune deficiency population, 60% of our adult subjects were females, while in the under 18 population, 62% were male. (See Fig 1.) Ninety percent of the subjects were over the age of 18, and of those, nearly 40% were treated for Ig deficiencies using intravenous IgG by usage, the average prediagnostic age at start of treatment was 5 years, and for adult subjects, the average age was 30. (See Fig 2B.)

Ig Administration and Dosing

Both intravenous IgG (IVIg) and subcutaneous IgG (SCIg) administration are approved in the treatment of PID (Fig 24). Subjects enrolled for IVIg, 69% received SCIg, and 26% the average dose for SCIg subjects was 129 mg/kg weekly; the average IVIg dose was 473 mg/kg monthly. (See Fig A.)

SCIg administration is recommended at a slightly higher equivalent dose than IVIg to account for loss during administration and breakdown prior to entering systemic circulation. Our results show that the average conversion ratio for SCIg to IVIg was 1.17. Analysis of dosing using the recommended product-specific conversion of 1.37 shows that the average weekly dose is reduced by over 1.3 grams/week with the lower conversion ratio (4.6 grams/71.1 vs. 11.1 grams/71.1). (See Fig B.)

Subjects generally tolerated infusions with minimal side effects. The most common side effects were headache for IVIg subjects (49%), and of-infusion skin reactions for SCIg subjects (49%). (See Fig 7.)

Quality of Life Metrics

As part of the IDEaL data collection process, we mail on an SF-36 survey and LQIQ to the subjects every six months, starting within 30 days of receiving a signed consent. Our results suggest that subjects are generally happy with their infusions, and that they feel their health is improving. The LQIQ 10 categories that subjects scored highest were emotional well-being, physical function, pain, role physical, general health, vitality, role emotional, and social function. Subjects also had a positive perception of their overall treatment experience. (See Fig A.)

SCIg patients switched from IVIg to SCIg had a conversion ratio of 1.17, below the manufacturer recommended dose conversion of 1.37. (See Fig B.)

• Subjects with SCIg averaged 129 mg/kg administered weekly, while IVIg subjects averaged 473 mg/kg administered every four weeks. Subjects switched from IVIg to SCIg had a conversion ratio of 1.17, below the manufacturer recommended dose conversion of 1.37.

Conclusions

The IDEaL Patient Registry is designed to collect and analyze data from subjects receiving Ig therapy in a real-world setting. Our findings show that:

• Of our subjects tested for pneumococcal response, 75% showed a blunted response to 50% of the 12 common serotypes used in pneumococcal immunization, our population averaged a positive response to four serotypes, and 75% of our population responded to 2 or fewer of the serotypes. Our results show that the two subclasses that were marked as low by the testing lab were averaged. Our results show that the PIc Ig levels substantially across the U.S., and many subjects may not be receiving recommended care.

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• Subjects were asked if they needed to take antibiotics in response to an infection. Overall, subjects ended up taking antibiotics for over 80% of those reported infections, though the rates differed depending on route of Ig administration (IVIg 87.76%), (See Fig B.)

• Subjects had a positive perception of their Ig treatment and felt that it was benefiting their health. However, we noted a small improvement over time, and more importantly, we noted that there was an overall neutral-to-negative perception of treatment cost. (See Figs. 8C, D.)

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