

INTERNSHIP REPORT

IMPROVEMENTS IN QUALITY OF LIFE IN SICKLE CELL DISEASE PATIENTS

A CROSS-SECTIONAL STUDY CONDUCTED IN THE FRENCH WEST INDIES

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TABLE OF CONTENTS

Acronyms and abbreviations.....	7
Abstract.....	9
1. Introduction.....	10
2. Contextual Background.....	12
2.1. <i>Sickle Cell Disease: epidemiology and pathophysiology.....</i>	<i>12</i>
2.2. <i>Treatment of L-Glutamine.....</i>	<i>14</i>
2.3. <i>Clinical trials versus Real-World Data.....</i>	<i>15</i>
2.4. <i>Gathering RWD for SCD: assessing Quality of Life.....</i>	<i>17</i>
2.4.1. <i>Questionnaires to assess QoL in SCD.....</i>	<i>18</i>
3. Theoretical Background.....	19
3.1. <i>ASCQ-Me.....</i>	<i>19</i>
3.2. <i>Conceptual Framework.....</i>	<i>20</i>
4. Methodology.....	22
4.1. <i>Study design and choice of methodology.....</i>	<i>22</i>
4.2. <i>Cross-sectional study.....</i>	<i>23</i>
4.2.1. <i>Process.....</i>	<i>24</i>
4.3. <i>Physicians' perceptions and experiences.....</i>	<i>25</i>
4.3.1. <i>Sampling strategy.....</i>	<i>25</i>
4.4. <i>Observational registry.....</i>	<i>25</i>
5. Results.....	26
5.1 <i>Physicians' perceptions.....</i>	<i>26</i>
5.1.1. <i>Quality of life assessment in SCD.....</i>	<i>26</i>
5.1.2. <i>Prescribing L-Glutamine.....</i>	<i>27</i>
5.1.3. <i>Experiences and observations.....</i>	<i>27</i>
5.2. <i>QoL Assessment.....</i>	<i>29</i>
5.2.1. <i>Respondent characteristics.....</i>	<i>29</i>
5.2.2. <i>Results on QoL domains.....</i>	<i>29</i>
5.2.3. <i>Comparison and results of the different domains.....</i>	<i>32</i>

5.3.	<i>Observational registry</i>	33
6.	Discussion	34
6.1.	<i>Overview</i>	34
6.2.	<i>Real-world examples of real-world data</i>	34
6.2.1.	RWD on L-GLN and regulatory approval	35
6.2.2.	HU and Quality of Life.	36
6.3.	<i>Limitations</i>	36
6.3.1.	Quality of Life assessment	36
6.3.2.	Experts opinion	37
6.3.3.	Observational registry	37
6.4.	<i>Strenghts and future research</i>	37
6.5.	<i>Future theoretical frameworks</i>	38
6.6.	<i>Conclusion</i>	39
	<i>Bibliography</i>	40
Appendix	45
	<i>Informed Consent (French)</i>	45
	<i>ASCQ-Me survey</i>	46
	<i>Interview guide</i>	52

ABSTRACT

Background: Sickle cell disease (SCD) patients have limited treatment options. However, last year, oral-based L-Glutamine (L-GLN) was approved by the US Food and Drug Administration (FDA) as a treatment for SCD patients older than five years living in the United States. In the French West Indies (FWI), which is part of Europe, SCD patients are only able to get access to this treatment via the Early Access Program (EAP) facilitated by myTomorrows, a Dutch company. Currently, in the FWI, 16 patients are being treated with L-GLN. However, it is unknown how patients in a real-life environment are affected by this treatment, especially regarding Quality of Life (QoL) domains. Therefore, the goal of this research is to augment knowledge about L-GLN as a treatment for SCD patients or gather so-called Real-World Data (RWD). More specifically, objectives were (1) assess the QoL of SCD patients receiving L-GLN treatment compared to patients not receiving this treatment; (2) explore perceptions and experiences of physicians prescribing L-GLN for SCD patients. Lastly, an observational registry was set-up in two hospitals in the FWI to prospectively assess the effectiveness and safety of L-GLN.

Methods: This cross-sectional, non-interventional, multi-center study, assessed the QoL of SCD patients with the validated patient report outcome (PRO) survey; Adult Sickle Cell Quality of Life Measurement Information System (ACSQ-Me). The different domains on QoL of patients receiving L-GLN (n=8) were compared to patients receiving no L-GLN (n=17), but with comparable history of SCD and characteristics. Besides, physicians who were experts in the field of SCD, were interviewed. Semi-structured interviews were conducted regarding their experiences and perspectives on L-GLN as a treatment for SCD. These interviews served to get a better understanding of SCD in FWI, QoL and the perceived effect of L-GLN.

Results: The results indicate a better QoL for patients receiving L-GLN compared to the control group. On the domains assessing the physical, mental and social state, L-GLN patients scored higher, meaning having a better QoL. Patients receiving L-GLN treatment had significantly improved scores on four different domains, with a significance of $p < 0,05$. This implies that L-GLN treatment results in significant improvements on emotional distress impact and stiffness impact and it results in less frequent painful episodes less severe painful episodes. Results on pain episode frequency are concurrent with the reduction of the number of crises seen in the clinical trial (CT), which led to the FDA-approval of L-GLN. According to the interviews, all four physicians were content about the effect of the treatment. They agreed to see fewer crises and hospitalizations in the patients receiving L-GLN treatment. Also, an observational registry was set-up in hospital Ricou and Rosemon. This includes data entry from local Electronic Health Record (EHR) and biological parameters into Castor (electronic data capture platform). Retrospectively, the baseline information was gathered, meaning all data 12 months before the start of treatment. After a year, all data will be compared with the baseline retrieved in this study.

Conclusion: This is the first study showing the benefit of L-GLN treatment in a real-world environment by showing improvements on various QoL domains in SCD patients in the FWI. Besides, this is one of the first studies assessing the effect of a treatment intervention by using a specific designed PRO for SCD. Further research could build on the present study by doing a prospective study to test the hypothesis that L-GLN improves QoL in SCD patients. Real-world evidence (RWE) is becoming increasingly important, in where it informs on a drug's effectiveness and safety outside of CT's and may lead to clinical decision making. Specifically, for SCD patients in Europe, such additional RWD may potentially lead to approval of L-GLN by the EMA, since it augments knowledge from the RCT performed in 2018.

Keywords: Sickle cell disease, L-Glutamine, Health-related quality of life, Real-world data, Patient-reported outcomes, Perceptions, Observational registry, Quality of Life.