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CORRELATIONS BETWEEN CHANGES IN THE URTICARIA ACTIVITY SCORE (UAS7) AND THE DERMATOLOGY LIFE QUALITY INDEX (DLQI) FROM BASELINE TO 28 OR 40 WEEKS: COMPARISONS OF TRAJECTORIES OF CHANGE IN PATIENTS WITH CHRONIC SPONTANEOUS/IDIOPATHIC URTICARIA (CSU/CIU)

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BACKGROUND

- Chronic spontaneous urticaria (CSU) also known as chronic idiopathic urticaria (CIU) is defined as the occurrence of daily or almost daily wheals/hives, pruritus and/or angioedema for more than 6 weeks (Zuberbier et al., 2009, Greaves 2003).
- Duration of the CSU/CIU is generally 1–5 years but is likely to be longer in more severe cases, cases with concurrent angioedema, in combination with physical urticaria or with a positive autologous serum skin test (Maurer et al., 2011).
- Limited robust data is available on the prevalence of CSU/CIU, but reports of anywhere between 0.1% and 3% of the population in the US and Europe experience CSU/CIU (Greaves, 2000, 2003; Maurer et al., 2011; Sabroe and Greaves, 1997; Zazzali et al., 2012; Zuberbier et al., 2010).
- Moreover, estimates of the mean direct and indirect costs for patients with CSU/CIU in the US range from $244 million to as much as $5 billion, depending on the estimate of prevalence used (DeLong et al., 2008; Maurer et al., 2011).

HUMANISTIC BURDEN OF CSU/CIU

- CSU/CIU symptoms have a large effect on different domains of health-related quality of life (HRQoL) (O'Donnell 1997, Baiardini, 2003, Chung 2010) such as:
  - Activities of daily living
  - Sleep disturbance and loss of energy
  - Emotional and psychological distress
  - Restrictions on social life, loss of work productivity
- Different categories of patient-reported outcomes (PRO) instruments (generic, dermatological or disease-specific) are used to assess the CIU/CSU disease burden
- An important question to answer is whether our understanding of the humanistic burden of CSU/CIU is comparable regardless of the type of measure used. In particular, for instruments that are either dermatological-specific versus those that are CSU/CIU-specific, will assessments yield a similar understanding of the HRQoL for patients with CSU/CIU?
- Two measures, in particular, are the focus of this examination:
  - Dermatology Life Quality Index (DLQI) with score range 0-30
  - Urticaria Activity Score 7 (UAS7) with score range 0-42
  - For both instruments higher score means higher impairment
- The DLQI is the most widely used dermatological instrument to assess HRQoL in patients with dermatological diseases and it was validated for use in patients with CSU/CIU (Lennox et al., 2004). The instrument has a one-week recall period.
- The UAS7 is a daily diary which assesses key urticaria symptoms (wheals/hives and pruritus). The score is calculated as the sum of daily itch and hive score over 7 days and is recommended by guidelines (EAACI/GA2LEN/EDF/WAO; Zuberbier et al., 2009) for routine clinical practice to determine disease activity and response to treatment.
- Given that these two PROs are commonly used but potentially not with the same patients, and each uses a different recall period, it is important to understand to what extent they provide a similar understanding of patients' disease severity, impact on HRQoL and their response to treatment.
  - If researchers and clinicians have comparable understanding of a patient's condition and response to treatment regardless of which of these instruments is used to assess CSU/CIU, then there is greater confidence that either instrument will yield insights into the effects of CSU/CIU and its treatment on patients.
  - Further, if a comparable understanding of a patient's condition and response to treatment can be obtained from a single assessment referring to the past week (DLQI), physicians could administer the DLQI in lieu of UAS7, especially when there are concerns about potential missing diary data or difficulties of UAS7 implementation in daily practice.
- The purpose of this analysis was to examine changes in a symptom-based instrument, the UAS7, with those of a dermatologic-specific HRQoL instrument, the DLQI, to see if the DLQI could be used in a single clinic visit in lieu of collecting UAS7 diary data.

METHODS

Data

- Data come from three pivotal, phase III clinical trials (ASTERIA I, ASTERIA II, GLACIAL) investigating the effects of omalizumab for patients with refractory CSU/CIU (Maurer 2013).
- Treatment was administered once every 4 weeks until 24 weeks in the 40-week trials (ASTERIA I and GLACIAL), and until 12 weeks in the 28-week trial (ASTERIA II).
- In all trials there was a 16-week follow-up period with no active treatment.
- DLQI data were collected at
  - Baseline and weeks 4, 12, 24, and 40 in two trials (ASTERIA I and GLACIAL), and
  - Baseline and weeks 4, 12, and 28 (ASTERIA II)
- UAS7 scores were reported at baseline and every four weeks. UAS7 data from the same weeks as the DLQI were used for these analyses.

Analytic Methods

- Data from all 3 studies were analysed using a growth curve analysis known as latent growth modelling to evaluate change across all assessment points for each patient, irrespective of treatment, and compare change in one variable with change in another.
- Unlike analyses that compare mean changes between groups of patients, latent growth models (LGMs) calculate an intercept and slope of change for each patient for each PRO and allow the intercepts and slopes of change to be correlated (Stull, 2008).
- This indicates the extent to which change in a patient's DLQI score is associated with change in their UAS7 score.
- The greater the correlation between a patient's slopes of change in DLQI and UAS7, the greater the similarity in what these two instruments are assessing.

RESULTS

- Across all three trials, the correlation between slopes of change in DLQI and UAS7 scores was very high (r = 0.88 – 0.94), indicating that the trajectory of change in a patient's score on the DLQI very closely matches that of the UAS7 score.
  - That is, if a patient's score on the DLQI changed 1 standardized point, their score on the UAS7 changed nearly the same standardized amount.
- Increases in both UAS7 and DLQI can be seen in the follow-up period after week 24 (ASTERIA I and GLACIAL) and week 12 (ASTERIA II), after treatment ended.
- Figure 1 presents these results for ASTERIA I; Figure 2 presents these results for ASTERIA II; Figure 3 presents these results for GLACIAL.

Figure 1 Latent Growth Curves for ASTERIA I (N=318) - Trajectory of change in PROs from baseline to week 24 (treatment period) and from week 24 to week 40 (follow-up period with no treatment)

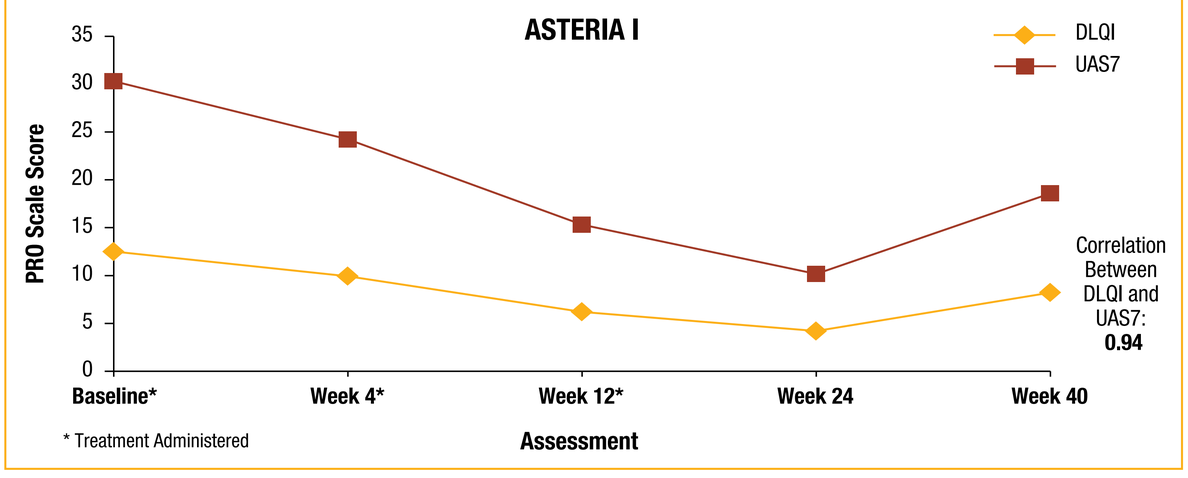


Figure 2 Latent Growth Curves for ASTERIA II (N=323) - Trajectory of change in PROs from baseline to week 12 (treatment period) and from week 12 to week 28 (follow-up period with no treatment)

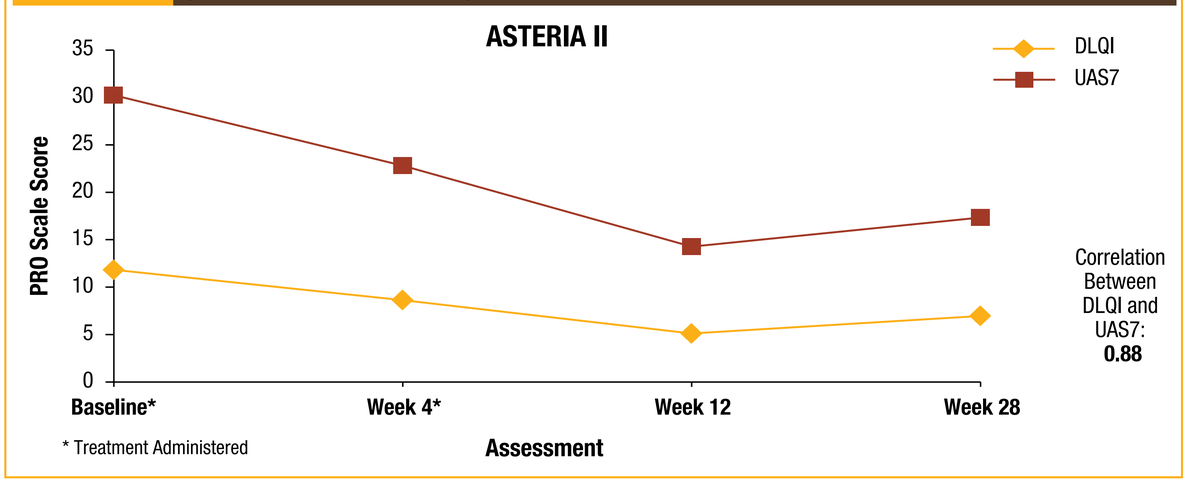
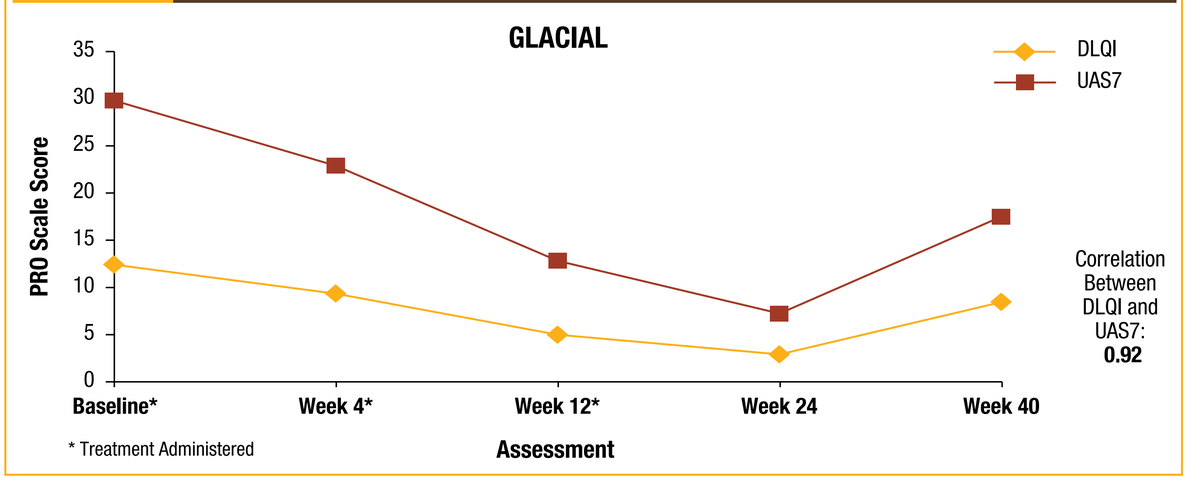


Figure 3 Latent Growth Curves for GLACIAL (N=335) - Trajectory of change in PROs from baseline to week 24 (treatment period) and from week 24 to week 40 (follow-up period with no treatment)



CONCLUSIONS

- The results of these latent growth models give clear and compelling evidence that the UAS7, a daily diary summed over seven days, and the DLQI, a brief, single assessment of HRQoL referring to the previous week, showed nearly identical responses:
  - Improvements in symptoms, as measured by the UAS7, are reflected in improvements in HRQoL, as measured by the DLQI.
- Changes in one PRO can inform a clinician about the extent of changes in the other PRO, so using either PRO could yield very good insights into changes in the patient's condition or their response to treatment.
- These results suggest that collecting DLQI information in-clinic from patients with CSU/CIU:
  - Can provide an excellent indication about symptoms assessed with UAS7 score,
  - Less likely to suffer from potential data loss because of inconsistent completion of the daily diary, and
  - Is more efficient for routine clinical practice in assessing CSU/CIU patients
- These analyses do not control for disease severity or duration of disease. Future analyses will explore the influence of these variables and whether changes in specific symptoms of the UAS7 or domains of the DLQI correlate more or less than others.
- Overall, the results of this study support the use of the DLQI in routine clinical practice to assess and monitor CSU/CIU patients.

REFERENCES

Baiardini, I., Giardini, A., Pasquali, M., Dignetti, P., Guerra, L., Specchia, C., et al. Quality of life and patients' satisfaction in chronic urticaria and respiratory allergy. Allergy. 2003 Jul;58(7):621-3.

Chung, M. C., Symons, C., Gillaim, J. & Kaminski, E. R. (2010) Stress, psychiatric co-morbidity and coping in patients with chronic idiopathic urticaria. Psychol Health, 25, 477-90.

Delong, L. K., Culler, S. D., Saini, S. S., Beck, L. A. & Chen, S. C. (2008) Annual direct and indirect health care costs of chronic idiopathic urticaria: a cost analysis of 50 nonimmunosuppressed patients. Arch Dermatol, 144, 35-9.

Greaves, M. (2000) Chronic urticaria. J Allergy Clin Immunol, 105, 664-72.

Greaves, M. W. (2003) Chronic idiopathic urticaria. Curr Opin Allergy Clin Immunol, 3, 363-8.

Lennox, R. D., Leahy, M. J. (2004) Validation of the Dermatology Life Quality Index as an outcome measure for urticaria-related quality of life. Ann Allergy Asthma Immunol, Aug;93(2):142-6.

Maurer, M., Rosén, K., Hsieh, H-J, Saini, S., Grattan, C., Gimenéz-Arnau, A., Agarwal, S., Doyle,R., Canvin, J., Kaplan, A., & Casale, T. (2013) Omalizumab for the Treatment of Chronic Idiopathic or Spontaneous Urticaria. N Engl J Med, Mar 7;368(10):924-35.

Maurer, M., Weller, K., Bindslev-Jensen, C., Gimenez-Arnau, A., Bousquet, P. J., Bousquet, J., Canonica, G. W., Church, M. K., Godse, K. V., Grattan, C. E., Greaves, M. W., Hide, M., Kalogeromitros, D., Kaplan, A. P., Saini, S. S., Zhu, X. J. & Zuberbier, T. (2011) Unmet clinical needs in chronic spontaneous urticaria. A GA(2)LEN task force report. Allergy, 66, 317-30.

Sabroe, R. A. & Greaves, M. W. (1997) The pathogenesis of chronic idiopathic urticaria. Arch Dermatol, 133, 1003-8.

Stull DE. Analyzing Growth and Change: Latent Variable Growth Curve Modeling with an Application to Clinical Trials. Quality of Life Research. 2008; 17(1):47-59.

Yang, H. Y., Sun, C. C., Wu, Y. C. & Wang, J. D. (2005) Stress, insomnia, and chronic idiopathic urticaria--a case-control study. J Formos Med Assoc, 104, 254-63.

Zazzali, J. L., Broder, M. S., Chang, E., Chiu, M. W. & Hogan, D. J. (2012) Cost, utilization, and patterns of medication use associated with chronic idiopathic urticaria. Ann Allergy Asthma Immunol, 108, 98-102.

Zuberbier, T., Asero, R., Bindslev-Jensen, C., Walter Canonica, G., Church, M. K., Gimenez-Arnau, A., Grattan, C. E., Kapp, A., Merk, H. F., Rogala, B., Saini, S., Sanchez-Borges, M., Schmid-Grendelmeier, P., Schunemann, H., Staubach, P., Vena, G. A., Wedi, B. & Maurer, M. (2009). EAACI/GA(2)LEN/EDF/WAO guideline: definition, classification and diagnosis of urticaria. Allergy, 64, 1417-26.

Zuberbier, T., Balke, M., Worm, M., Edenharter, G. & Maurer, M. (2010) Epidemiology of urticaria: a representative cross-sectional population survey. Clin Exp Dermatol, 35, 869-73.

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