Title
Transient improvement of urticaria induces poor adherence as assessed by Morisky Medication Adherence Scale-8.

Permalink
https://escholarship.org/uc/item/0h54v1zf

Journal
The Journal of dermatology, 42(11)

ISSN
0385-2407

Authors
Kaneko, Sakae
Masuda, Koji
Hiragun, Takaaki
et al.

Publication Date
2015-11-01

DOI
10.1111/1346-8138.12971

Peer reviewed
CONCISE COMMUNICATION

Transient improvement of urticaria induces poor adherence as assessed by Morisky Medication Adherence Scale-8

Sakae KANEKO,1 Koji MASUDA,2 Takaaki HIRAGUN,3 Naoko INOMATA,4 Masutaka FURUE, 5 Daisuke ONOZUKA,6 Satoshi TAKEUCHI,7 Hiroyuki MUROTA,8 Makoto SUGAYA,9 Hidehisa SAEKI,10 Yoichi SHINTANI,11 Yuichiro TSUNEMI,12 Shinya ABE,13 Miwa KOBAYASHI,14 Yuki KITAMI,15 Miki TANIOKA,16 Shinichi IMAFUKU,17 Masatosh Abe,18 Akihito HAGIHARA,6 Donald E. MORISKY,19 Norito KATOH2

1Department of Dermatology, Shimane University Graduate School of Medical Science, Shimane, 2Department of Dermatology, Kyoto Prefectural University of Medicine Graduate School of Medical Science, Kyoto, 3Department of Dermatology, Integrated Health Sciences, Institute of Biomedical and Health Sciences, Hiroshima University, Hiroshima, 4Department of Environmental Immuno-Dermatology, Yokohama City University Graduate School of Medicine, Kanagawa, 5Department of Dermatology, 6Department of Health Care Administration and Management, Kyushu University Graduate School of Medical Sciences, 7Department of Dermatology, Federation of National Public Service Personnel Mutual Aid Associations, Hamanomachi Hospital, Fukuoka, 8Department of Dermatology, Graduate School of Medicine, Osaka University, Osaka, 9Department of Dermatology, Faculty of Medicine, University of Tokyo, 10Department of Dermatology, Nippon Medical School, Tokyo, 11Department of Geriatric and Environmental Dermatology, Nagaoka City University Graduate School of Medical Sciences, Nagaoka, 12Department of Dermatology, Tokyo Women’s Medical University, Tokyo, 13Department of Dermatology, Kanazawa Medical University, Ishikawa, 14Department of Dermatology, University of Occupational and Environmental Health, Fukuoka, 15Department of Dermatology, Sapporo University School of Medicine, Sapporo, 16Tanioka Dermatology Clinic, Kyoto, 17Department of Dermatology, Faculty of Medicine, Fukuoka University, Fukuoka, 18Sapporo Skin Clinic, Hokkaido, Japan, 19Department of Community Health Sciences, UCLA Fielding School of Public Health, Los Angeles, CA, USA

ABSTRACT

Poor adherence to medication is a major public health challenge. Here, we aimed to determine the adherence to oral and topical medications and to analyze underlying associated factors using the translated Japanese version of Morisky Medication Adherence Scale-8 regarding urticaria treatment. Web-based questionnaires were performed for 3096 registered dermatological patients, along with a subanalysis of 751 registered urticaria patients in this study. The adherence to oral medication was significantly associated with the frequency of hospital visits. Variables that affected the adherence to topical medication included age and experience of drug effectiveness. The rate of responses that “It felt like the symptoms had improved” varied significantly among the dermatological diseases treated with oral medications. Dermatologists should be aware that adherence to the treatment of urticaria is quite low. Regular visits and active education for patients with urticaria are mandatory in order to achieve a good therapeutic outcome by increasing the adherence.

Key words: adherence, oral, topical, transient improvement, urticaria.

INTRODUCTION

Urticaria is one of the most common skin diseases and is characterized by the appearance of itchy wheals and flares that usually disappear within hours.1 “Spontaneous urticaria” is the most common type, in which wheals develop spontaneously over the course of a day. It consists of acute (spontaneous) urticaria and chronic (spontaneous) urticaria, in which wheals occur for less than 6 weeks or 6 weeks or more, respectively.2 In Japan, the term “chronic urticaria” is used to represent, on some occasions, urticaria that continues for more than 1 month regardless of the presence of triggers.1

The medication adherence of patients with acute urticaria does not seem to affect the outcome, because it is usually self-limiting. However, in chronic urticaria, poor adherence often results in the failure of treatment and the relapse of symptoms. Recently, an eight-item self-reporting scale was developed by Morisky et al.,3 called the Morisky Medication Adherence Scale-8 (MMAS-8). Although this scale originally targeted oral medication for hypertensive patients, we recently assessed the medication adherence for oral and topical remedies using a translated Japanese version of MMAS-8.4,5 We also performed a subanalysis of 751 registered patients with urticaria in this study.

Correspondence: Sakae Kaneko, M.D., Department of Dermatology, Shimane University Faculty of Medicine, 89-1 Enya-cho, Izumo City, Shimane 693-8501, Japan. Email: kanekos2@med.shimane-u.ac.jp
Received 16 March 2015; accepted 26 April 2015.
METHODS

This study was conducted among patients registered in a monitoring system established by Macromill (Tokyo, Japan) which has been described elsewhere.4,5 Our Web-based questionnaire included questions on the following items: age, sex, marital status, annual income, employment status, educational status, smoking habit, alcohol consumption, frequency of hospital visits, disease duration, main health-care institution, oral or topical medication, experience of the effectiveness of oral medication, experience of the effectiveness of topical medication, experience of adverse events associated with oral medication, experience of adverse events associated with topical medication and overall satisfaction with treatment, as well as MMAS-8 for oral medication and MMAS-8 for topical medication.

The characteristics of the whole sample and of the groups with different levels of adherence in terms of the MMAS-8 score are presented. The χ²-test for categorical variables or ANOVA for continuous variables was used to evaluate the differences in the study variables among the three adherence groups. Internal consistency was assessed using Cronbach’s alpha. An acceptable Cronbach’s alpha value is considered to be 0.7 or more.6 Known group validity was assessed through the association of items and MMAS categories using correlation coefficient and covariance. All analyses were performed using STATA version 9 (StataCorp, College Station, TX, USA). The significance level was set at P < 0.05.

RESULTS

Demographic data of the 751 patients with urticaria are summarized in Table 1. The mean age of these subjects was 45.4 years (range, 17–80) and 33.6% of them were male. Among these 751 patients, a total of 673 took oral medication and 528 were treated with topical medication. Mean adherence scores by MMAS-8 were 4.9 for oral and 4.2 for topical medication. The reliability scores (i.e. Cronbach’s alpha) were 0.683 for oral MMAS-8 and 0.726 for topical MMAS-8, which demonstrated moderate to high reliability of the Japanese version of MMAS-8.

As shown in Table 2, the adherence to oral medication was significantly associated with the frequency of hospital visits. Variables that affected the adherence to topical medication were age, disease duration and experience of drug effectiveness.

Among the 673 urticaria patients with oral drugs, 75 (11.1%) admitted that they ignored doctors’ instructions, whereas 124 of the 528 (23.5%) urticaria patients with topical remedies did so. Although 29.0% (36/124) of patients stopped applying topical remedies because they thought their lesion had been cured, significantly more patients (48.0%; 36/75) stopped oral drugs due to the same reason, suggesting that the adherence to oral drugs could be affected more by patients’ own decisions regarding continued medication use (Table 3). Factors that influence adherence to oral and topical medication were investigated. Patients’ reasons for not adhering to their

| Table 1. Basic characteristics of urticaria patients (n = 751) |
|---------------------------------------------------------------|
| Characteristics | n | % |
| Age, mean (SD, range), years | 45.4 (11.7, 17–80) |
| Sex | | |
| Male | 252 | 33.6 |
| Female | 499 | 66.4 |
| Marital status | | |
| Married | 270 | 36.0 |
| Unmarried | 481 | 64.0 |
| Annual income | | |
| ≥¥6 million | 266 | 40.6 |
| <¥6 million | 389 | 59.4 |
| Employment | | |
| Employed | 453 | 62.8 |
| Unemployed | 268 | 37.2 |
| Education | | |
| University graduate | 306 | 41.1 |
| Not university graduate | 439 | 58.9 |
| Smoking | | |
| Smoker | 147 | 19.7 |
| Non-smoker | 600 | 80.3 |
| Alcohol | | |
| ≥Once a month | 430 | 57.6 |
| <Once a month | 317 | 42.4 |
| Frequency of MD visits | | |
| ≥Once a half-year | 637 | 84.8 |
| <Once a half-year or unknown | 114 | 15.2 |
| Disease duration | | |
| <Half a year | 179 | 23.8 |
| ≥Half a year to 1 year | 169 | 22.5 |
| >1–3 years | 168 | 22.4 |
| ≥3–5 years | 71 | 9.5 |
| >5–10 years | 79 | 10.5 |
| >10–20 years | 45 | 6.0 |
| >20 years | 40 | 5.3 |
| Main health-care institution | | |
| University hospital | 25 | 3.4 |
| Municipal hospital | 135 | 18.1 |
| Private clinic or other | 586 | 78.6 |
| Oral medication | | |
| Experience of drug effectiveness | | |
| Yes | 611 | 90.8 |
| No | 62 | 9.2 |
| Experience of adverse events | | |
| Yes | 124 | 18.4 |
| No | 549 | 81.6 |
| Topical medication | | |
| Experience of drug effectiveness | | |
| Yes | 443 | 83.9 |
| No | 85 | 16.1 |
| Experience of adverse events | | |
| Yes | 51 | 9.7 |
| No | 477 | 90.3 |
| Overall satisfaction with treatment | | |
| >Satisfied | 440 | 58.6 |
| ≤Satisfied | 311 | 41.4 |
| Adherence, mean (SD, range) | | |
| Oral medication | 4.9 (1.9, 0.25–8) |
| Topical medication | 4.2 (2.1, 0–8) |
| Cronbach’s alpha of adherence measure | | |
| Oral medication | 0.683 |
| Topical medication | 0.726 |

© 2015 The Authors. The Journal of Dermatology published by Wiley Publishing Asia Pty Ltd on behalf of Japanese Dermatological Association.
Table 2. Prevalence of study variables for the three adherence levels among urticaria patients: oral and topical medication

| Characteristics | Oral medication (n = 673) | Topical medication (n = 528) |
|----------------|--------------------------|-------------------------------|
|                | High adherence (n = 62)  | Medium adherence (n = 171)    | Low adherence (n = 440)   | High adherence (n = 33) | Medium adherence (n = 97) | Low adherence (n = 398)   | P    |
| Age, mean (SD), years | 47.7 (10.8) | 46.0 (11.2) | 45.0 (12.1) | 0.194 | 48.6 (11.2) | 47.8 (12.4) | 44.9 (12.3) | 0.041 |
| Sex            | Male 23 (10.3) | 57 (25.5) | 144 (64.3) | 0.792 | 8 (4.6) | 35 (20.1) | 131 (75.3) | 0.458 |
|                | Female 39 (8.7) | 114 (25.4) | 296 (65.9) | 25 (7.1) | 62 (17.5) | 267 (75.4) |             |      |
| Marital status | Married 18 (7.4) | 60 (24.6) | 166 (68.0) | 0.384 | 10 (5.1) | 37 (18.9) | 149 (76.0) | 0.698 |
|                | Unmarried 44 (10.3) | 111 (25.9) | 274 (63.9) | 23 (6.9) | 60 (18.1) | 249 (75.0) |             |      |
| Annual income  | >¥6 million 26 (11.0) | 60 (25.4) | 150 (63.6) | 0.591 | 12 (6.7) | 33 (18.5) | 133 (74.7) | 0.836 |
|                | <¥6 million 30 (8.5) | 91 (25.8) | 232 (65.7) | 16 (5.7) | 49 (17.4) | 217 (77.0) |             |      |
| Employment     | Employed 33 (8.0) | 107 (26.1) | 270 (65.9) | 0.348 | 15 (4.8) | 60 (19.3) | 236 (75.9) | 0.100 |
|                | Unemployed 27 (11.5) | 60 (25.5) | 148 (63.0) | 18 (9.2) | 30 (15.4) | 147 (75.4) |             |      |
| Education      | University graduate 22 (7.9) | 74 (26.6) | 182 (65.5) | 0.616 | 12 (5.6) | 44 (20.4) | 160 (74.1) | 0.536 |
|                | Not university graduate 39 (10.0) | 97 (24.9) | 254 (65.1) | 21 (6.8) | 52 (16.9) | 235 (76.3) |             |      |
| Smoking        | Smoker 10 (7.8) | 33 (25.8) | 85 (66.4) | 0.822 | 6 (5.4) | 22 (19.6) | 84 (75.0) | 0.861 |
|                | Non-smoker 52 (9.6) | 138 (25.5) | 352 (64.9) | 27 (6.6) | 75 (18.2) | 310 (75.2) |             |      |
| Alcohol        | >Once a month 33 (8.6) | 87 (22.8) | 262 (68.6) | 0.104 | 18 (5.9) | 49 (16.1) | 238 (78.0) | 0.190 |
|                | <Once a month 29 (10.1) | 84 (29.2) | 175 (60.8) | 15 (6.8) | 48 (21.9) | 156 (71.2) |             |      |
| Frequency of hospital visits | >Once a half-year 60 (10.3) | 136 (23.4) | 386 (66.3) | 0.001 | 29 (6.6) | 76 (17.2) | 336 (76.2) | 0.276 |
|                | <Once a half-year or unknown 2 (2.2) | 35 (38.5) | 54 (59.3) | 4 (4.6) | 21 (24.1) | 62 (71.3) |             |      |
| Disease duration | >Half a year 16 (10.3) | 47 (30.1) | 93 (59.6) | 0.311 | 17 (11.5) | 28 (18.9) | 103 (69.6) | 0.017 |
|                | >Half a year to 1 year 8 (5.8) | 40 (29.0) | 90 (65.2) | 4 (3.1) | 28 (21.4) | 99 (75.6) |             |      |
|                | >1-3 years 15 (9.4) | 36 (22.6) | 108 (67.9) | 6 (4.5) | 24 (21.6) | 81 (73.0) |             |      |
|                | >3 years 23 (10.5) | 48 (21.8) | 149 (67.7) | 6 (4.4) | 17 (12.3) | 115 (83.3) |             |      |
| Main health-care institution | University hospital 3 (13.0) | 5 (21.7) | 15 (65.2) | 0.859† | 0 (0.0) | 5 (29.4) | 12 (70.6) | 0.474† |
|                | Municipal hospital 10 (8.6) | 27 (23.1) | 80 (68.4) | 6 (6.5) | 20 (21.5) | 67 (72.0) |             |      |
|                | Private clinic or other 48 (9.1) | 139 (26.2) | 343 (64.7) | 27 (6.5) | 69 (16.6) | 319 (76.9) |             |      |
| Experience of drug effectiveness | Yes 58 (9.5) | 157 (25.7) | 396 (64.8) | 0.575 | 30 (6.8) | 88 (19.9) | 325 (73.4) | 0.049 |
|                | No 4 (6.5) | 14 (22.6) | 44 (71.0) | 3 (5.5) | 9 (16.6) | 73 (85.9) |             |      |
| Experience of adverse events | Yes 10 (8.1) | 32 (25.8) | 82 (66.1) | 0.887 | 2 (3.9) | 10 (19.6) | 39 (76.5) | 0.864† |
|                | No 52 (9.5) | 139 (25.3) | 358 (65.2) | 31 (6.5) | 87 (18.2) | 359 (75.3) |             |      |
| Overall satisfaction with treatment | >Satisfied 37 (9.4) | 109 (27.8) | 246 (62.8) | 0.205 | 22 (7.0) | 60 (19.1) | 232 (73.9) | 0.558 |
|                | Satisfied 25 (8.9) | 62 (22.1) | 194 (69.0) | 11 (5.1) | 37 (17.3) | 166 (77.6) |             |      |

†Fisher's exact test. SD, standard deviation.
In conclusion, to improve adherence to urticaria treatment, patients should be aware of the importance of continuing oral medication for a certain period proactively, even if they do not have any symptoms. Concurrently, evidence is needed to show how long patients should continue oral medications depending on the severity and duration of urticaria. Furthermore, the evidence-based treatment guidelines for urticaria should be widely accepted by not only dermatologists, but also primary physicians.

ACKNOWLEDGMENTS: We asked MPR to run the administrative office for the present study, and would like to thank this

Table 3. Factors that influence poor adherence to oral and topical medication

| Oral medication | Atopic dermatitis, n = 177 (61.9%) | Urticaria, n = 75 (26.2%) | Psoriasis, n = 13 (4.5%) | Tinea, n = 21 (7.3%) | P |
|------------------|-----------------------------------|--------------------------|--------------------------|---------------------|---|
| It felt like the symptoms had improved | Yes | 69 (39.0) | 36 (48.0) | 4 (30.8) | 2 (9.5) | 0.009 |
| No | 108 (61.0) | 39 (52.0) | 9 (69.2) | 19 (90.5) |

| Topical medication | Atopic dermatitis, n = 349 (50.7%) | Urticaria, n = 124 (18.6%) | Psoriasis, n = 73 (10.6%) | Tinea, n = 143 (20.8%) | P |
|-------------------|-----------------------------------|--------------------------|--------------------------|---------------------|---|
| It felt like the symptoms had improved | Yes | 122 (35.0) | 36 (29.0) | 24 (32.9) | 45 (31.5) | 0.650 |
| No | 227 (65.0) | 88 (71.0) | 49 (67.1) | 98 (68.5) |
company for carrying out the questionnaire survey and collecting data. This study was financially supported by Mitsubishi Tanabe Pharma.

CONFLICT OF INTEREST: None declared.

REFERENCES

1 Hide M, Hiragun T. Japanese guidelines for diagnosis and treatment of urticaria in comparison with other countries. Allergol Int 2012; 61: 517–527.
2 Zuberbier T, Asero R, Bindslev-Jensen C et al. EAACI/GA(2)LEN/ EDF/WAO guideline: definition, classification and diagnosis of urticaria. Allergy 2009; 64: 1417–1426.
3 Morisky DE, Ang A, Krousel-Wood M, Ward HJ. Predictive validity of a medication adherence measure in an outpatient setting. J Clin Hypertens (Greenwich) 2008; 10: 348–354.
4 Furue M, Onozuka D, Takeuchi S et al. Poor adherence to oral and topical medication in 3096 dermatological patients as assessed by the Morisky Medication Adherence Scale-8. Br J Dermatol 2015; 172: 272–275.
5 Saeki H, Imafuku S, Abe M et al. Poor adherence to medication as assessed by Morisky Medication Adherence Scale-8 and low satisfaction with treatment in 237 psoriasis patients. J Dermatol 2015; 42: 367–72.
6 Cortina JM. What is coefficient alpha? An examination of theory and applications. J Appl Psychol 1993; 78: 98–104.
7 Champion RH. Urticaria: then and now. Br J Dermatol 1988; 119: 427–436.
8 Nettis E, Pannofino A, D’Aprile C, Ferrannini A, Tursi A. Clinical and aetiological aspects in urticaria and angio-oedema. Br J Dermatol 2003; 148: 501–506.
9 Zuberbier T, Balke M, Worm M, Edenharter G, Maurer M. Epidemiology of urticaria: a representative cross-sectional population survey. Clin Exp Dermatol 2010; 35: 869–873.
10 Gaig P, Olona M, Muñoz Lejarazu D et al. Epidemiology of urticaria in Spain. J Investig Allergol Clin Immunol 2004; 14: 214–220.
11 World Health Organization. Adherence to long-term therapies: Evidence for action. World Health Organization, Geneva 2003; 107–114.
12 Richmond NA, Lamel SA, Braun LR et al. Primary nonadherence (failure to obtain prescribed medicines) among dermatology patients. J Am Acad Dermatol 2014; 70: 201–203.
13 Conlon NP, Edgar JD. Adherence to best practice guidelines in chronic spontaneous urticaria (CSU) improves patient outcome. Eur J Dermatol 2014; 24: 385–386.
14 Al-Qazzaz HKh, Hassali MA, Shafie AA et al. The eight-item Morisky Medication Adherence Scale MMAS: translation and validation of the Malaysian version. Diabetes Res Clin Pract 2010; 90: 216–221.
15 Staubach P, Eckhardt-Henn A, Dechene M et al. Quality of life in patients with chronic urticaria is differentially impaired and determined by psychiatric comorbidity. Br J Dermatol 2006; 154: 294–298.