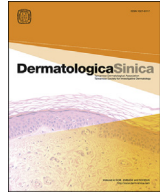


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ORIGINAL ARTICLE

Evaluation of faciocutaneous clues to systemic diseases: A learning module for Chinese undergraduate medical students

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ABSTRACT

Background: Medical students will encounter cutaneous lesions associated with systemic disorders during their training and career. However, there are no chapters in Chinese undergraduate medical textbooks regarding these lesions.

Objective: The objective of the present study was to evaluate the impact of an additional learning module about cutaneous lesions associated with systemic disorders for Chinese undergraduates.

Methods: In this medical course, we introduced a case-based clinical learning module. This module was evaluated with a pre-/postcourse questionnaire and a final multichoice examination.

Results: After learning, more students agreed that some skin lesions could serve as “windows” to hidden systemic diseases, and it was more important to learn how to distinguish lesions associated with systemic diseases from simplex ones. We found that the group that was provided conventional teaching plus this module scored significantly better (52.75 ± 23.96) than the conventional teaching group (40.53 ± 21.43 ; $t = 2.370$, $p = 0.020$) in the final multichoice examination.

Conclusion: Introducing this additional learning module may offer an early opportunity to explore systemic diseases from a dermatological view and is likely to lay the foundations for interdisciplinary collaboration in the future practice for medical students.

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Introduction

The skin is more than the largest human organ, separating us from the outside world. It is also an integral component of the entire body. Skin conditions are broadly classified into two categories based on their association with the human body: nonsystemic and systemic lesions. Systemic lesions are cutaneous lesions that are associated with systemic disorders and may be the initial complaint that forces patients to seek medical attention, and they often serve as “windows” to systemic disorders.^{1,2}

Medical students will encounter cutaneous lesions that are associated with systemic disorders during their training and career, regardless of their specialty. The high prevalence of lesions makes dermatology education an essential component of the curricula for undergraduate medical students.^{3,4} Some systemic disorders or syndromes often have incomplete skin penetrance and variable expression. These characteristics make these disorders under-recognized, which often results in increased morbidity and mortality.⁵ Physicians should maintain a high index of suspicion for an underlying systemic disorder when patients present with unexplained abnormal skin findings.⁶ Therefore, knowledge about the cutaneous manifestations of systemic disorders or syndromes will serve medical students extremely well throughout their careers. Unfortunately, in the Chinese dermatology textbook for undergraduate medical students, there are only sporadic descriptions of skin symptoms of systemic disorders, such as butterfly rash in systemic lupus erythematosus. There is no specialized chapter in

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the textbook for undergraduate medical students in China (Supplementary Table 1).

In contrast to other areas, the face is the most highly exposed area and is also the first area seen by a physician when a patient visits. The face readily provides not only identifiable personal information but is also an indicator of internal disorders or malignancies. Therefore, an awareness of faciocutaneous hallmarks and their characteristics is of great value to medical students in their future careers.⁵ In this learning module, we introduce important faciocutaneous lesions related to systemic disorders and also recommended several internet resources. The objective of this study was to evaluate the impact of this additional module on dermatological learning using a pre-/postcourse questionnaire and a multiple-choice examination.

Methods

From 2009 to 2012, a clinical case-based module of faciocutaneous clues to systemic diseases was designed for 4th-year undergraduate medical students at the Third Military Medical University, Chongqing, China. The systemic diseases with faciocutaneous hallmarks included in this module are lentiginosis syndromes (LEOPARD syndrome, Peutz–Jeghers syndrome, and Carney complex), photosensitivity syndromes (Bloom syndrome and Rothmund–Thomson syndrome), a telangiectasia syndrome (Osler–Weber–Rendu syndrome), hamartoma syndromes (Cowden syndrome, tuberous sclerosis complex, Birt–Hogg–Dubé syndrome, MEN syndrome, Gardner syndrome, and Muir–Torre syndrome), and metabolic deposition syndromes (Urbach–Wiethe disease and alkaptonuria; Figure 1).⁵ This learning module consists of images of clinical patients, model mimics, section views, cutaneous distributions, and other details (Figure 1, Supplementary Figure 1).

A total of 238 undergraduate medical students were enrolled in this study and were not encouraged to participate. All of the students finished the above learning module and the following questionnaire. No students had prior formal exposure to dermatology. After finishing this course, they were asked to complete readings from the recommended internet resources (Supplementary Table 2). These students were required to complete the questionnaire (Table 1) before and after the entire course.

The impact of this new learning module was evaluated with a 10-item case example slide test (Supplementary Figure 2). A group of 40 randomly-selected undergraduate medical students with this learning experience were compared with 38 medical students who did not have access to this learning module.

The difference between the pre- and postlearning module for each question in the questionnaire was analyzed using a Chi-square test with SPSS 13.0 software (SPSS Inc., IL, USA). We combined the response categories on the Likert scale (the “agree” plus “strongly agree” responses and the “disagree” plus “strongly disagree” responses). Upon introducing a Bonferroni correction, $p < 0.006$ was considered statistically significant. Student t test was used to analyze the difference between conventional teaching and the new module, and p -values < 0.01 were considered statistically significant.

Results

More students agree that some skin lesions could serve as windows to hidden systemic diseases

Replies were received from all 238 medical students (Table 1). After the learning module, more students (97.9%) agreed with Statement A—changes of the skin are often associated with other organs—than before the learning module (94.5%), although the difference was not significant ($\chi^2 = 3.695$, $p = 0.055$; Figure 2A, Supplementary Table 3). For Statement B—some skin lesions serve as windows through which hidden systemic diseases can be prompted—there was a significant difference between the pre- and postlearning modules (39.1% vs. 94.1% agree, $\chi^2 = 162.066$, $p < 0.006$; Figure 2B, Supplementary Table 3).

It is more important to know how to distinguish lesions associated with systemic diseases from simplex ones

For Statement C—know/remember the syndrome names, such as LEOPARD, Peutz–Jeghers, Bloom, and Rothmund–Thomson—there was a significant difference between the pre- and postlearning modules (5.5% vs. 20.2% agree, $\chi^2 = 23.034$, $p < 0.006$; Figure 2C, Supplementary Table 3). The low percentage of agree plus strongly agree suggests that the majority of students showed little interest in remembering the names of the syndromes, probably because of

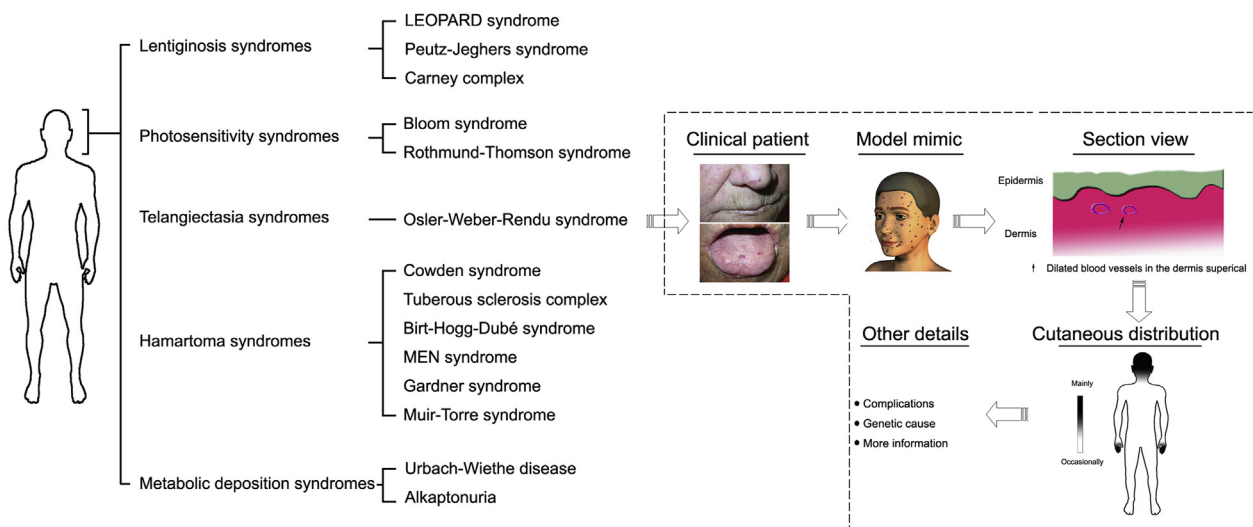


Figure 1 Syndromes with faciocutaneous hallmarks discussed in this learning module. An example of this learning module is Osler–Weber–Rendu syndrome. It consists of pictures of the clinical patients, model mimics, section views, cutaneous distributions, and other details.

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