

Evaluation of the ICDP–UEMS Dermatopathology Examination

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Abstract: A detailed analysis of the results of the international annual International Committee for Dermatopathology–Union Européenne des Médecins Spécialistes dermatopathology examination was undertaken to identify clues for further improvement. The analysis covered 5 consecutive years (2006–2010) and involved a total of 860 questions (591 common questions and 269 uncommon questions) and 181 participants. It focused on the overall performance of the participants, the performance per part of the examination (theoretical or practical), the performance per format of question (multiple choice or open), the performance per dermatopathological topic, and the performance per professional background (dermatologist or pathologist). The overall performance of the participants was high (on average 75% correct answers in 2006 and 85% correct answers in the subsequent years). In the theoretical part of the examination, the topics of vascular diseases and lichenoid dermatoses scored better than the average of all topics, and the topics of cutaneous lymphoproliferative diseases and melanocytic disorders scored worse. In the first practical part (interpretation of images), dermatologists outperformed pathologists, especially on providing a diagnosis (open question format) of clinical images. In the second practical part (microscopical examination), the topics of vascular diseases, granulomatous diseases, including necrobiotic and degenerative and metabolic diseases scored better than the average of all topics, and the topic of infectious diseases scored worse. The results of this detailed analysis provide an excellent feedback to the examination committee that will be used to consider the adjustment of parts and/or topics of the examination that showed a deviant performance by the participants. In addition, it is recommended to give more attention to the postgraduate education of certain dermatopathological topics, including cutaneous lymphoproliferative diseases, melanocytic disorders, and infectious diseases.

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INTRODUCTION

It is of prime importance that patients are offered high-quality diagnosis and treatment. This is obviously pertinent to both clinical dermatology and dermatopathology.¹ Evaluation of the quality of diagnosis can be achieved by various generic and specific measures. An important step is to test residents—at the end of the training—and specialists to assess their knowledge and understanding by an examination.² This is a common practice in the United States, the United Kingdom, and a few other countries.³ To provide an opportunity for dermatologists, pathologists, and dermatopathologists from other countries, the International Committee for Dermatopathology (ICDP) and the Dermatology and Pathology Sections of the Union Européenne des Médecins Spécialistes (UEMS) have been conducting an annual Dermatopathology examination that meets international standards for the past several years. The background of the examination and the first experiences in terms of participation and pass rates have been reported previously.⁴ Postexamination analysis of objective tests are needed to reach an optimal reliability and validity.⁵ Therefore, the Advisory Committee on the ICDP–UEMS dermatopathology examination has recommended a more detailed analysis to identify reliable information that may be useful for further improvement in the quality of the examination.

In this respect, a relevant question is the overall performance of the participants during a number of years. The examination consists of 3 parts: the first part is made of theoretical questions, the second includes both clinical and histological images, and the third part is with glass slides.

We analyze the performance for each part. As each part consists of both multiple-choice questions and open questions, we also analyze the performance per format of question. As the examination involves different dermatopathological topics, it is also important to know the performance per topic.

Because the participants include both dermatologists and pathologists, it is also important to know the performance of both disciplines. Finally, which of the above aspects are interrelated? Could this information provide enough feedback to the Examination Committee that could be used in order to make adjustments for further improvement of the quality of the

examination? Can this information provide guidance to recommend certain topics for postgraduate education?

Based on the foregoing considerations, we embarked on a qualitative analysis of the ICDP–UEMS dermatopathology examinations for the period 2006–2010. We show that the detailed results are highly informative as feedback to the examination committee and provide useful information toward specific recommendations for postgraduate education in dermatopathology.

MATERIALS AND METHODS

Preparation of the Examination

A question bank was set up by the members of the Examination Committee (L.C., Heinz K., Helmut K., D.R., and M.W.); consultation on the questions was given by Dr Sanguenza. Currently, the bank consists of theoretical questions, of which the majority are multiple-choice questions (4 alternatives) and the minority are open questions. In addition, clinical and histological images, including immunohistochemistry images, with corresponding questions were prepared. For this part, most of the questions were open questions. Additionally, microscopic slides of specific dermatopathological lesions were selected and their corresponding questions were made, of which the majority were multiple-choice questions and the minority were open questions. The questions are evaluated by the Examination Committee to make sure that they cover all topics. Annual revision of the questions is performed based on the average performance per question, and an evaluation of questions with a deviant performance is carried out by the members of the Examination Committee.

Structure of the Examination

The examination is divided into 3 parts: part 1 (theoretical), 60 questions; part 2 (practical), interpretation of 40 projected images (50 in 2010); part 3 (practical), microscopical examination of 70 histological slides, 2 minutes per slide is allotted. Part 1 consists of 58 multiple-choice questions and 2 open questions, part 2 consists of 11 multiple-choice questions and 29 open questions (28 multiple-choice questions and 22 open questions in 2010), and part 3 consists of 51 multiple-choice questions and 19 open questions. During 5 consecutive examinations (2006–2010), 860 questions were posted, of which 78 were common to all years (23 in part 1, 20 in part 2, and 35 in part 3) and the remainder (272 uncommon questions) were present in 1–4 different years, with a mean presence of 1.73 times.

Participants

During the study period of 5 years (2006–2010), a total of 181 candidates appeared for the examination. Eight candidates (4.4%) took at least one part of the examination more than once. The candidates were derived from countries from all over the world, including Europe, Africa, Asia, North America, South America, and Australia/Oceania. Of the 181 candidates, 118 (65%) were dermatologists and 63 (35%) were pathologists.

Content Inventory

A content inventory was based on the 16 chapters of the textbook, “Pathology of the Skin” by Phillip McKee⁶: (1) normal histology of the skin, (2) congenital diseases, (3) vesicular and bullous dermatoses, (4) infectious diseases, (5) vascular diseases, (6) necrobiotic and granulomatous diseases, (7) degenerative and metabolic diseases, (8) inflammatory dermatoses, (9) lichenoid dermatoses, (10) diseases of the subcutaneous fat, (11) idiopathic connective tissue disorders, (12) cutaneous lymphoproliferative diseases and allied disorders, (13) melanocytic nevi and malignant melanoma, (14) tumors of the surface epithelium, (15) tumors of the epidermal appendages, and (16) tumors of the dermis and subcutaneous fat. All questions were scored for content category (topic) by one of the authors (D.R.) and subsequently verified for consistency by 2 of the authors (D.R. and T.V.). In case of doubt, the category corresponding with the correct answer was chosen.

Data Collection

The scores per candidate per question and the content category per question were entered in an Excel database.

Questions that were present in more than one examination were labeled separately.

Statistical Analysis

Given the fact that it is hard to conceive that the population the present data would be a random sample of the general population, we will mostly describe the results without using formal statistical tests. We will consider different aggregation levels of the data: we will look at the overall performance, the performance per part, the performance per response format (multiple choice vs. open), and the performance per dermatopathological topic. To facilitate the comparison over the years, we will occasionally work with the responses on the common questions. To justify this restriction, we will correlate the number of correct responses on all questions, the common questions, and the questions that were not present on all occasions (uncommon questions). To study the influence of the training, we will also look at the performance of dermatologists and pathologists separately.

The reliability, that is, the extent to which a measurement instrument consistently differentiates between individual subjects of interest⁷ was estimated for common items (questions) versus total items (questions), using Cronbach alpha statistics.⁸ The correlation between the score of all items versus common items was determined using Pearson product–moment correlation.⁵ The results were graphically presented using the computer program R 2.13.1.⁹

RESULTS

The overall performance of all candidates was high, that is, 75% correct answers in 2006 and 85% correct answers in 2007–2010 (Fig. 1). There was a high correlation in overall performance between the questions that were common to all years and all questions (Fig. 1). This was also found for the overall performance of the common and the uncommon questions (data not shown). Pearson product–moment correlation varied from 0.736 to 0.929. Item statistics and item-total

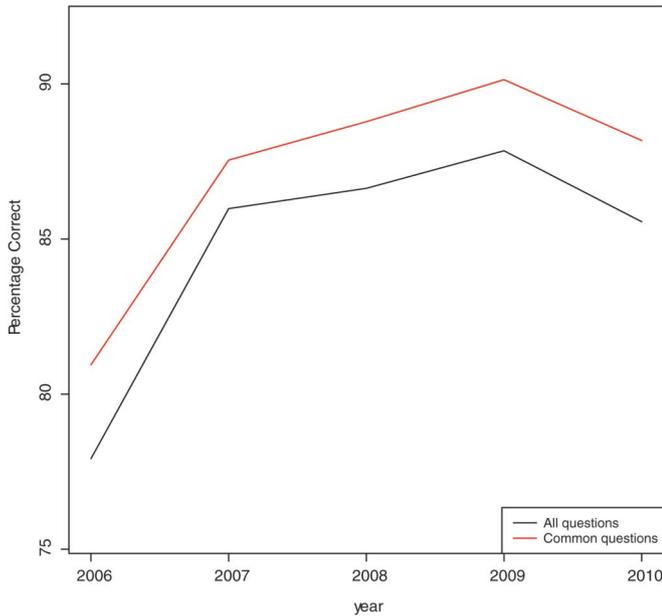


FIGURE 1. All questions versus common questions, showing a high performance (percentage correct questions) over the years. There is a high correlation between the trajectory of the curves.

statistics revealed a Cronbach alpha varying from 0.678 to 0.797.

The performance of all candidates in part 2 was lower than that in the other 2 parts (Fig. 2). This was because of the lower performance of pathologists as compared with dermatologists (Fig. 3), especially on the open questions (data not shown).

The performance of all candidates in part 1 on the topics of *vascular diseases* and *lichenoid dermatoses* was higher than

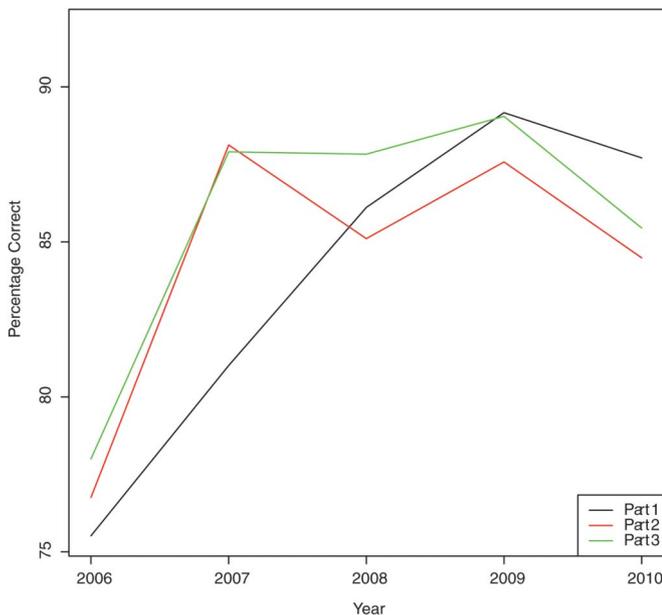


FIGURE 2. Percentage of correct answers per part of the examination. Note that the performance of part 2 is lower.

average and was lower than average on the topics of *lymphoproliferative diseases* and *melanocytic disorders* (Fig. 4).

In part 2, no clear differences among the various topics were found (data not shown).

The performance of all candidates in part 3 on the topics of *vascular diseases*, *necrobiotic and granulomatous diseases*, and *degenerative and metabolic diseases* was higher than average but lower than average on the topic of *infectious diseases* (Fig. 5).

DISCUSSION

A detailed analysis of the results of the international annual ICDP–UEMS Dermatopathology examination was undertaken to obtain information for further improvement. This is currently advised as the best practice to monitor the quality of an examination.⁵ The analysis covered 5 recent consecutive years (2006–2010) involved a total of 860 questions and 181 participants. The overall performance of the participants was high and consistent over the years, although 2006 showed a slightly worse result. The performance related to the different parts of the examination, the different dermatopathological topics, and the professional discipline of the participants showed a differentiated pattern that needs further discussion.

The annual ICDP–UEMS examination is representative for the dermatopathological professional practice for 2 reasons. First, it consists of a theoretical part and 2 practical parts, of which one concerns interpretation of clinical and nonclinical images and the other concerns microscopical examination in order to obtain a dermatopathological diagnosis. Second, it is representative for the entire discipline of dermatopathology, covering all the topics mentioned in the textbooks. Our finding that dermatologists had a higher performance on open questions related to clinical images than pathologists is not surprising, given their training and experience on the clinical field. From the perspective of the examination, the question is to what an extent pathologists should be able to adequately interpret clinical images. Is it sufficient that they master multiple-choice questions on clinical images or should they have the same competence as dermatologists on the open questions? For the sake of the quality of dermatopathology, we would like to advocate that pathologists receive more training in clinical dermatology. However, dermatologists and pathologists have a similar performance on diagnosing dermatopathological lesions in microscopical slides. This suggests that dermatologists interested to sit the ICDP–UEMS examination have adequate training and experience in microscopical examination of skin specimens.

As different topics of dermatopathology may have different complexities, both in theoretical and practical terms, and both dermatologists and pathologists may express difficulties in diagnosing diseases of specific topics, we expected differences in the performance of the participants with respect to certain topics. To our surprise, the questions on the topics of *vascular diseases* and *lichenoid dermatoses* in the theoretical part scored better than the average of all topics. This was also the case for questions on the topic of *vascular diseases* in

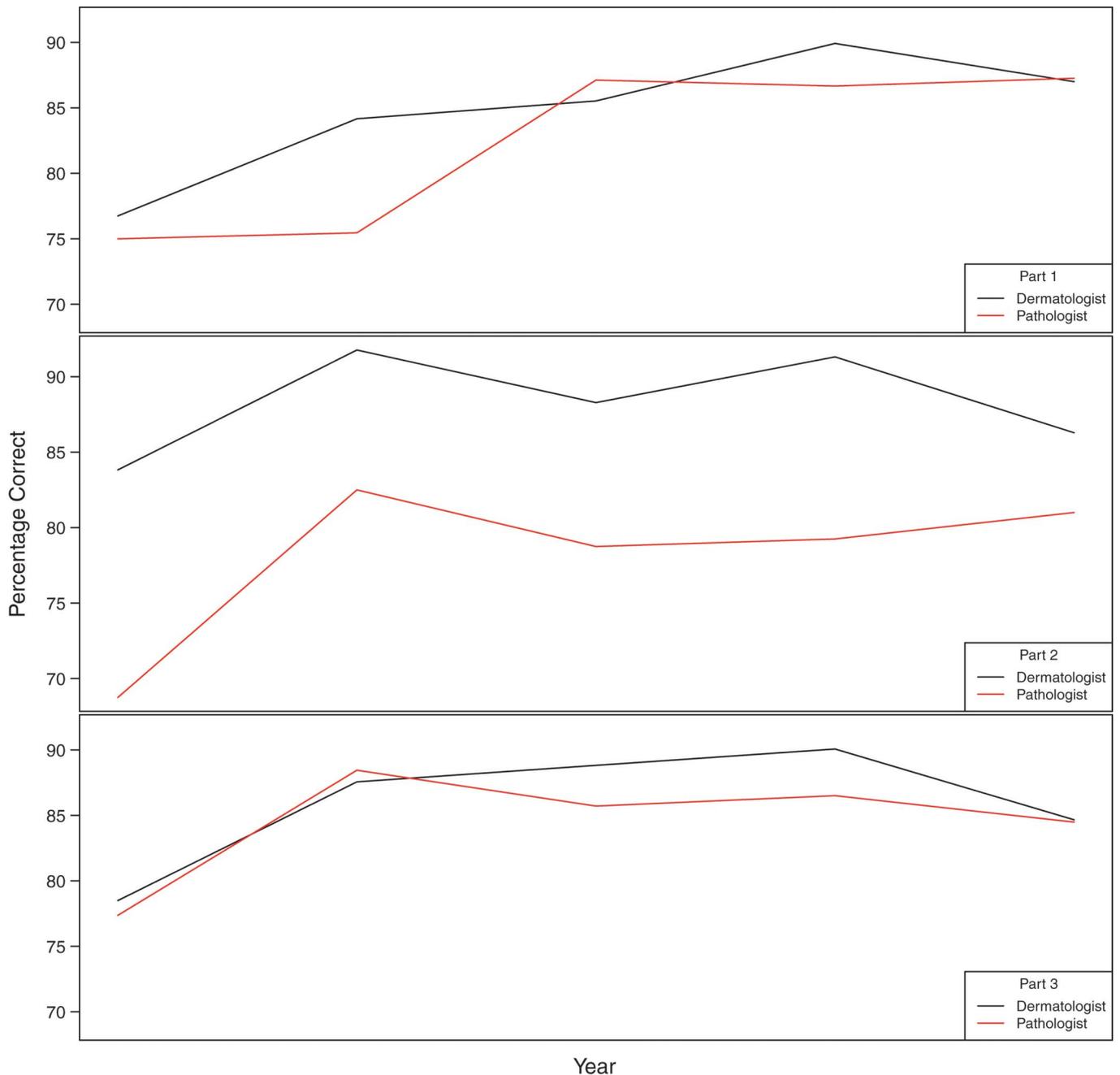


FIGURE 3. Percentage of correct answers by dermatologists versus pathologists. Note that the performance of pathologists in part 2 is lower.

the second practical part (microscopical examination). It is difficult to give a plausible explanation for this finding because these topics are not simple.

However, the questions on the topics of *cutaneous lymphoproliferative diseases* and *melanocytic disorders* scored worse than the average of all topics. This is not surprising because these topics are considered by both dermatologists and pathologists as very difficult, not only regarding theory but also regarding practice. This is illustrated by the fact that

in cutaneous lymphoproliferative diseases, a morphological spectrum exists,¹⁰ and additional immunohistochemical and/or molecular techniques are often needed to solve the differential diagnosis.¹¹ In melanocytic disorders also, a morphological spectrum is observed,¹² and consultation with an expert dermatopathologist panel is regularly needed to make a diagnosis with confidence.¹³ Strikingly, the questions on the topic of *infectious diseases* in the second practical part (microscopical examination) scored worse than the average of

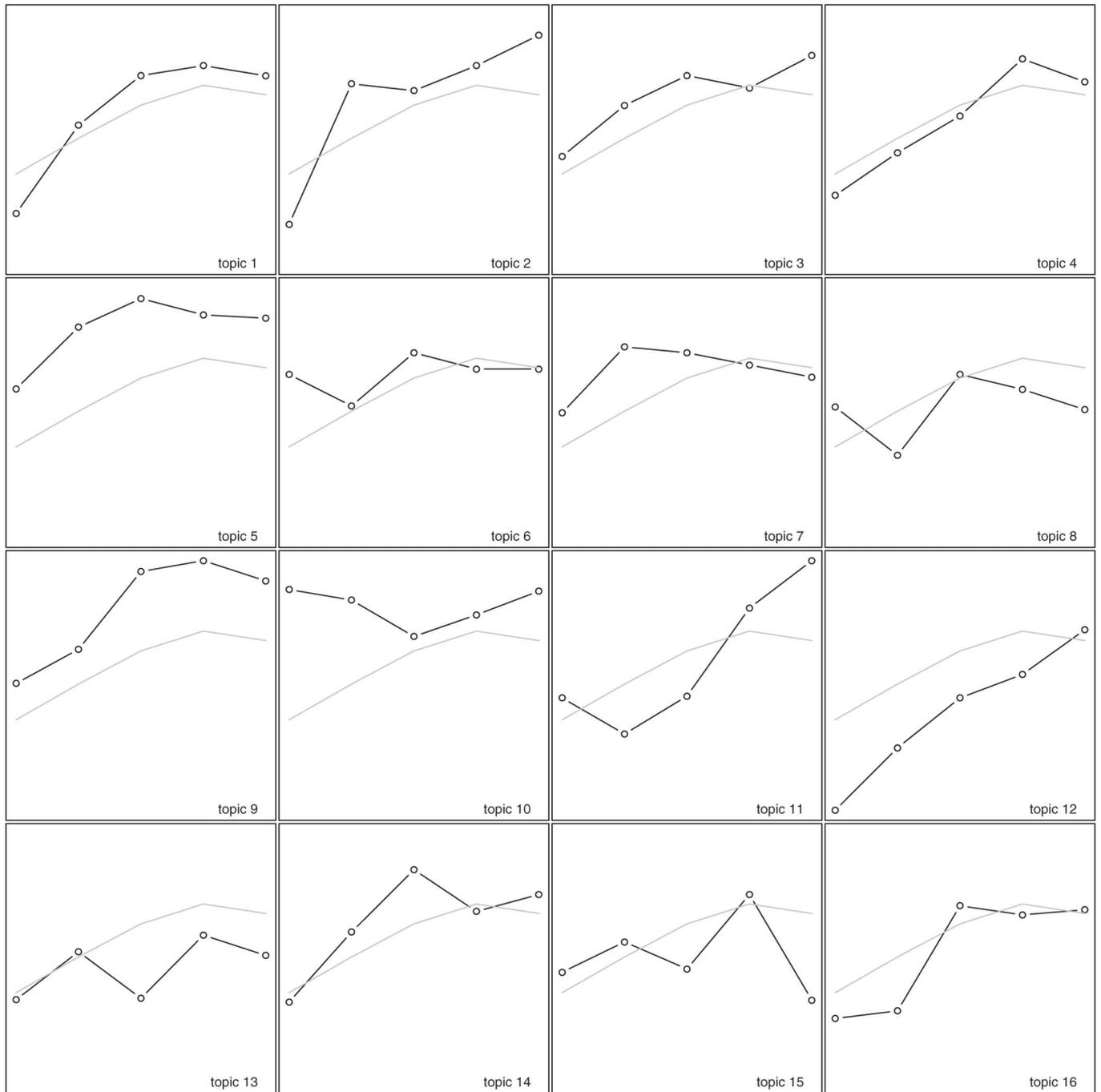


FIGURE 4. Percentage of correct answers on part 1 per dermatopathological category (topic) (dark line) as compared to the average of all topics (gray line). Note that topics 5 and 9 show a percentage higher than average, and topics 12 and 13, a percentage lower than average. For explanation of topics, see Materials and Methods.

all topics. This may be due to the fact that this topic is very broad, and the prevalence of infections—and hence their familiarity by health professionals—varies markedly in different parts of the world.

The findings of a lower performance on certain dermatopathological topics during the annual examination is relevant for a number of reasons. First, it stimulates the

Examination Committee to critically review the quality of the particular questions as part of the examination cycle.⁵ As we are convinced that the quality is adequate, we feel that we should maintain these questions because they are valid to the content of dermatopathology, which is our subject matter. This is also in a more general context propagated by medical educationalists.⁷ We even consider to include

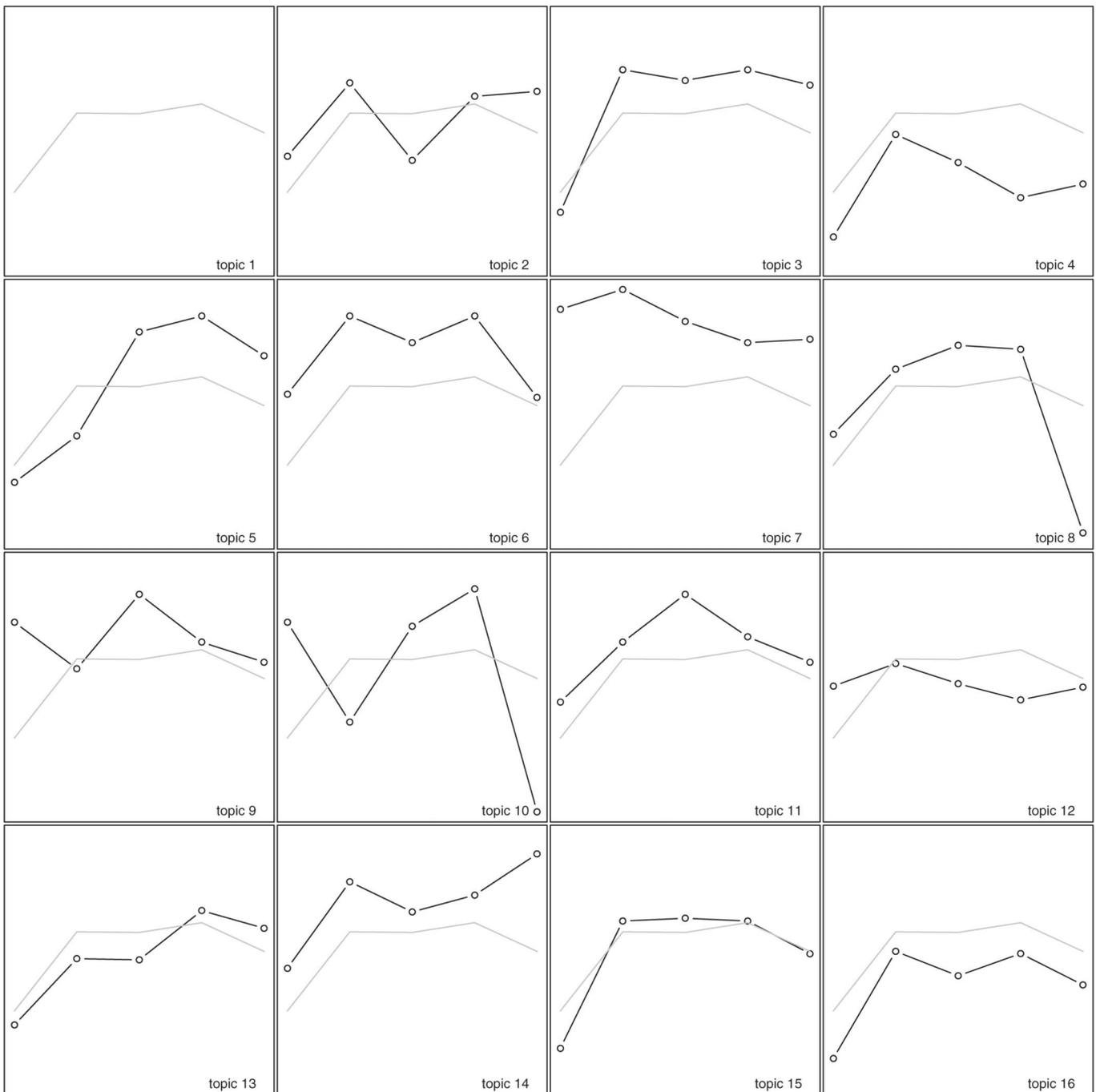


FIGURE 5. Percentage of correct answers on part 3 per dermatopathological category (topic) (dark line) as compared with the average of all topics (gray line). Note that topics 5, 6, and 7 show a percentage higher than average, and topic 4, a percentage lower than average. The number of questions in topic 1 was too low to allow a reliable calculation of a percentage. For explanation of topics, see Materials and Methods.

key questions that should be answered correctly because competence on this particular issue is so crucial. Second, the lower performance on certain topics suggests an intrinsic difficulty with the subject matter. This is comparable to a so-called “student misconception” that can be detected using a standardized set of questions covering a discipline.¹⁴ Those

“student misconceptions” require more efforts on learning and teaching.¹⁵ Thus, the lower performance on these topics can be interpreted as an opportunity for specific subjects during future postgraduate educational activities. Because several members of the Examination Committee and Advisory Committee are involved in postgraduate education, this

suggestion can be easily incorporated into the program of future courses.

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