Clinical Genitourinary Pathology

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Editor

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A Case-Based Learning Approach

Springer

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To those colleagues who enjoy their studies and their work

Foreword: Case-Based Learning: An Important Tool for Pathology Education

Pathologists use many sources of information to come to a diagnosis, in the center of which remains the morphology of a process as seen in a tissue slide. To become a reliable pathologist, one has to have a broad knowledge base on disease processes and their features and the ability to integrate the various forms of information into a diagnosis that needs to be communicated to the clinician. Basic knowledge can be found in textbooks and images of processes in atlases. These provide therefore a sound basis that each trainee can use to acquire most of the skills that are needed. But the most important qualities a pathologist needs to have, integration and communication, can only be achieved through experience with real cases/patients. It is often stated that only in routine practice after the traineeship the reliable pathologist is created. It therefore makes sense that case-based learning is used to improve the process by which a person becomes the pathologist who is such an important person for many patients. As an experienced medical oncologist once said to me, I can only be as good as my pathologist. Many experienced pathologists know this quite well (although trainees often think that formal education is more important), which explains why slide seminars and video microscope sessions at congresses are so popular. I am convinced already for many years that only through experiencing many cases one can become an expert.

Therefore, I am so pleased that Prof. Andreas C. Lazaris took up the challenge to create a book fully based on case-based learning. This book is a timely and welcome addition to the possibilities there are to learn pathology. Such a book can only be made by a person who has exceptional teaching qualities, great experience in routine practice, and the stamina to do the work that is needed. I therefore congratulate him with the completion of this work. Not only Prof. A. C. Lazaris should be congratulated, but also the reader and user of the book. He or she will find a wealth of information presented in a way that is different from textbooks and atlases, and using this thoroughly will largely increase the speed by which a young pathologist becomes the reliable partner in the clinic. So, in the end, the patient who will benefit from the increased quality of the pathologist through this book can be congratulated, too.

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Preface

This book aims to present basic clinicopathological insights into common genitourinary diseases, especially those of neoplastic nature, and to introduce experiential learning based on case presentations (case-based learning). One of the tasks that trainees face is converting the extensive amount of data available in classical medical textbooks into medical experience. A beginner pathologist often does not know where to start his/her study under the microscope and what exactly he/she should first assess. By using successive microscopic images within an educational rationale, the book gradually and analytically presents diagnostic procedures for lesions of the genitourinary system (kidney, urinary bladder, prostate gland, and testis). Characteristic real cases from my personal archive of the past 20 years, closely related to day-to-day medical practice, are presented for each organ, each case ending with a clinical commentary and key points/messages. This practical form of presentation helps readers acquire the valuable skill of effective diagnostic thinking, focusing their attention on the essential microscopic findings and disregarding insubstantial findings. A number of images have been deliberately kept showing some artifacts of the respective slides in order to achieve simulation with the daily operating conditions of a pathology laboratory.

Although clinical applications are frequently based on pathologic findings which therefore need to be clearly described and recorded, the importance of this in everyday medical practice is often ignored by medical students and downplayed by clinicians. Demonstrating how knowledge can be practically applied and how pathological-report data determine clinicians' decision-making, this book aims to be a valuable resource mainly for residents in pathology, urology, and oncology but also for medical students with a special interest in histopathology.

The pathology part of this book was developed by me personally, and it was based on classical genitourinary pathology textbooks which are cited as references. I attempted to record my medical experience in common diagnostic practical issues of genitourinary pathology for the benefit of trainees in pathology, urology, and oncology, interested clinicians, and medical students, in order that learners gain practical insight of the theoretical background they are traditionally taught, recognize basic patterns of tissue injury, and correlate pathologic findings with clinical data. The acquisition of my diagnostic experience in the field of genitourinary pathology was made possible by the fruitful discussions of the presented cases – and many more cases – in the last 20 years, with the following colleague pathologists whom I warmly thank: Prof. Agapitos E, Baliou E, Bobos M, Assoc. Prof. Goutas N, Koniaris E, Liakea A, Liapis G, Masaoutis C, Michaelides C, Assoc. Prof. Nonni A, Prof. Pavlakis K, Perdiki M, Pouloudi D, Sarlanis H, Assist. Prof. Thymara E, Assoc. Prof. Vlachodimitropoulos D, and Xirou P.

The contribution of the graduates of the School of Medicine of the National and Kapodistrian University of Athens Drs. Dimitrios Drekolias and Ilias Nikolakopoulos to the final configuration and clarification of the texts of this book is greatly appreciated.

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Introduction: Implementing Case-Based Learning in Pathology

» There is an intimate and necessary relation between the process of actual experience and education.
John Dewey, 1938

It is indisputable that nowadays one of the hardest and most important tasks in medicine and especially in medical education is the conversion of the extensive amount of available data into medical experience, after a proper analysis and systematization of what constitutes basic knowledge. Medical students are required to learn and retain vast amounts of knowledge on the path to becoming physicians (Yang et al. 2014). It is a common idea that achieving excellence in students once they enter clinical medicine practice poses a challenge in education. In recent years, innovative tools have been developed to supplement traditional materials and are being progressively included into medical education (Kim et al. 2011, Worm and Jensen 2013) due to their teaching potential; the relevant educational methods, in which students are no longer requested to be passive recipients of knowledge (Alur et al. 2002), have been shown to be associated with increased learning outcomes, with regard to various areas of health and medical education (Cook et al. 2010, Lakshmanan et al. 2014).

Pathology represents a major diagnostic field in modern medicine; it is linked with a number of distinct but interrelated medical specialties which diagnose diseases mostly through the analysis of biological samples. Through the analysis of tissue samples, i.e., biopsies and surgical resections, it allows medical doctors to exclude or confirm a suspected clinical diagnosis, such as cancer, and even to identify the presence of unsuspected concurrent diseases. The role that pathologists have in patient care is indeed crucial, since they are responsible for documenting fully the diagnostic evidence tissue samples can provide, in order that a correct final diagnosis is established. For example, the pathologist's interpretation of a tumor specimen is critical to establish the diagnosis of a benign or a malignant tumor, to distinguish between distinct histogenetic types of neoplasia, as well as to estimate the grade and the stage of the malignant neoplastic disease. In everyday working life, pathologists must be able to interpret a biopsy in order to make a final diagnosis, the accuracy of which is crucial for patients. All information provided by pathologists determines patients' prognosis and efficient treatment selection. The pathological examination of specimens under the microscope may be supported by further, tissue-based laboratory tests such as those making use of molecular biology techniques. A high level of competence in recognizing patterns of injury when tissue specimens are approached and in correlating the essential pathological data with other clinical-laboratory information is of vital importance to ensure that the correct diagnosis is made.

In the immense field of modern pathology, an extensive amount of data is available; as many practical skills as possible are requested to be developed by future or present medical professionals. It takes a considerable amount of time and real devotion to acquire professional experience in the field of pathology; actually, it may take over 14 years to become a fully qualified pathologist. Being part of fundamental medical knowledge, pathology is currently taught, firstly on a theoretical basis, from the undergraduate level of medical studies. Medical students are requested to retain an extensive amount of knowledge. Attending lectures and taking advantage of textbooks and atlases, students are supposed to learn how to recognize the state of disease and describe main patterns of tissue injury. In their professional life, pathologists are requested to evaluate microscopic diagnostic features in patients' tissue sections so that a definite diagnosis is set. Too often, trainees/residents in pathology misunderstand the significance of their microscopic findings and cannot distinguish, even after 2 or 3 years of professional experience in the field, the most helpful ones for the correct diagnosis; it takes a considerable amount of time and real devotion to obtain this capacity and become "experienced," though mistakes in the beginning of a pathologist's career can cost time, money, or deterioration of human health.

Teaching is an activity which is helping the student in learning. Teaching and learning are being modified due to innovations in education. Teachers have to understand the modern trends in teaching-learning process and make learning more interesting and interactive, so that students may be motivated to learn and learn better, after having personally experienced the value of a subject (Ambrose et al. 2010, Bass 2012, Boud et al. 1993, Ewert and Sibthorp 2009, Kolb 1984, Lave and Wenger 1991, Linn et al. 2004, Moore 2010, Qualters 2010, Schon 1983, Wurdinger and Carlson 2010). Conventional medical textbooks follow an encyclopedic-type formula citing single diagnostic features of specific diseases. In terms of pathology training, the "encyclopedic" knowledge of pathology is of secondary importance by comparison to the "experiential" one. Today's global educational environment is rapidly changing. The dominant perspective with regard to the future of medical education is experiential learning. Learning authentically implies that learners, simulating their present or future professional practice, gain medical experience in the process of diagnosing human diseases (Herrington and Kervin 2007).

After discussing and implementing teaching strategies in pathology and evaluating students' learning, teachers have been developing new-style pathology courses (Marshall et al. 2004). The main characteristics of the modern pathology module consist of pathology images combined with delivery of compact and guided learning courses (Hamilton et al. 2012, Lam et al. 2005). It is indisputable that simulation with everyday practice is a promising pedagogical tool in medicine (Carron et al. 2011). In this context, case-based learning is a newer modality of teaching healthcare. Case-based learning is a teaching tool used in a variety of medical fields using human cases to impart relevance and aid in

connecting theory to practice. The impact of case-based learning can reach from simple knowledge gains to changing patient care outcomes (McLean 2016, Nair et al. 2013). The application of experiential learning principles in the field of pathology aims at the integration of theory and practice in pathology, and this is directly linked with case-based learning (Lazaris et al. 2015, Riccioni et al. 2015). One of the major challenges for the medical student approaching the subject of pathology, the resident in pathology starting his/her diagnostic practice, and the future professional in general is to acquire the *basic knowledge* deriving from the huge amount of available information and be able to transform it to medical experience, essential for daily pathology practice. The introduction of experiential learning based on real, common cases helps the learner notice the connections between basic theory and experience. The prospect to record basic professional experience is intimately associated with the presentation of selected, common case studies; in this way, as many practical skills as possible can be developed by medical professionals. A new teaching approach based on case studies and discussions/commentaries has already been considered successful in medical teaching (Van Dijiken et al. 2008). The motivation *to learn* is greatly improved by the *study of cases* (Dacre and Fox 2000); the latter makes pathology *easier to understand*, and, furthermore, in this way, students can relate knowledge to a *real-world context* and their future profession (Weurlander et al. 2009). Cases should of course be carefully chosen for their learning potential. Through selected educational case studies, the learner is assisted to gain *practical insight* of the theoretical background he is traditionally taught, recognize and consolidate patterns of injury in basic pathologic lesions, and correlate them with clinical data and decisions.

Andreas C. Lazaris

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