

ATLAS OF SURGICAL PATHOLOGY

Editor

M.Nabil El-Bolkainy

Contributing Authors

Amany A Abou-Bakr	Nesreen Magdy
Nayera Anwar	Esam M Mandour
Omnia M Badawy	Osama M Mostafa
Mahmoud A EL-Baz	Magda Mourad
Tarek N EL-Bolkainy	M Akram Nouh
Mervat M F EL-Deftar	Ahmed M Rabie
Habiba EL-Fendy	Samir A Shawky
Saad S Eissa	Sohair H Shoman
Iman G Farahat	Hassan N Tawfik
Hoda M Ismail	Muhammad Zain.

Working Group of Atlas

Amany A Abou-Bakr
Omnia M Badawy
Nesreen Magdy
Ahmed M Rabie
Muhammad Zain.

The National Cancer Institute, Cairo, 2018

First Edition, 2018

This atlas is a nonprofit limited publication of the National Cancer Institute (NCI), Cairo University, not for sale and distributed free of charge to medical libraries in Egypt. The atlas is a reprint color reproduction of the picture disc of ‘ El-Bolkainy Surgical Pathology ’ previously published in 2018. The majority of pictures are photographs from private collection of the editor, but few are donated by colleagues or reproduced with recognition from PathologyOutlines.Com. This illustrative material are protected by copyright. No parts of this atlas may be reproduced by any means without written permission from the editor (M N EL-Bolkainy, 2 Sherif St, Apt 18, Lewa building, Cairo Egypt, Email: dr.nbolk@gmail.com).

Cover pictures: Bone marrow stem cells in culture, Bilharzia worms in portal circulation and Adenoid cystic carcinoma of salivary gland.

Printed in Egypt
EL-Dorra Publishing Co.

ISBN 978-977-807-125-2

Contributors

Amany A Abou-Bakr, MB BCh, MD

Professor, Department of pathology
National Cancer Institute
Cairo University, Egypt

Nayera Anwar, MB BCh, MD

Professor, Department of Pathology
National Cancer Institute
Cairo University, Egypt

Omnia M Badawy, MB BCh, MD

Lecturer, Department of Pathology
National Cancer Institute
Cairo University, Egypt

Mahmoud A El-Baz, MB BCh, MD

Professor, Department of Pathology
Consultant, Mansura Urology
and Nephrology Center
Mansura University, Egypt

**Muhammad N El-Bolkainy,
MB BCh, Dip Surg, PhD
(Michigan), ABP.**

Professor, Department of Pathology
National Cancer Institute
Cairo University, Egypt

**Tarek Nabil El-Bolkainy,
MB BCh, MD**

Assistant Professor,
Department of Pathology
National Cancer Institute
Cairo University, Egypt

Mervat MF El-Deftar, MB BCh, MD

Assistant Professor
Department of Pathology
National Cancer Institute
Cairo University, Egypt

Habiba El-Fendy, MB BCh, MSc

Assistant Lecturer,
Department of Pathology
National Cancer Institute
Cairo University, Egypt

Saad S Eissa, MB BCh, PhD

Professor, Department of Pathology
National Cancer Institute
Cairo University, Egypt

Iman G Farahat, MB BCh, MD

Professor, Department of pathology
National Cancer Institute
Cairo University, Egypt

Hoda M Ismail, MB BCh, MD

Professor, Department of Pathology
National Cancer Institute
Cairo University, Egypt

Nesreen Magdy, MB BCh, FRCPath, PhD

Lecturer, Department of Pathology
National Cancer Institute
Cairo University, Egypt

Esam M Mandour, MB BCh, MD

Lecturer, Department of Pathology
Al- Azhar Faculty of Medicine
Al- Azhar University, Egypt

Osama M Mostafa, MB BCh, MD

Lecturer, Department of Pathology
Al- Azhar Faculty of Medicine
Al- Azhar University, Egypt

Magda Mourad, MB BCh, MD

Professor, Department of Pathology
National Cancer Institute
Cairo University, Egypt

M Akram Nouh, MB BCh, MD

Professor, Department of Pathology
National Cancer Institute
Cairo University, Egypt

Ahmed M Rabie, MB BCh, MD

Lecturer, Department of Pathology
Al- Azhar Faculty of Medicine,
Al- Azhar University, Egypt

Samir A Shawky, MB BCh, MD

Lecturer, Department of Pathology
National Cancer Institute
Cairo University, Egypt

**Sohair H Shoman, MB BCh,
MD**

Professor, Department of Pathology
National Cancer Institute
Cairo University, Egypt

**Hassan Nabil Tawfik, MB BCh,
PhD**

Professor, Department of Pathology
National Cancer Institute
Cairo University, Egypt

**Muhammad Zainelabideen
Youssif. MB BCh, MSc.**

Assistant Lecturer,
Department of Pathology,
Al- Azhar Faculty of Medicine
Al- Azhar University, Egypt

Introduction

The present atlas is a printed reproduction of the 442 CD pictures of the recently published book “EL-Bolkainy Surgical Pathology, 2018”. The pictures cover all spectrums of lesions referred by surgeons to pathologists. The majority of pictures were photographed from the private collection of the editor, but, few were reproduced with recognition from Pathology Outlines.com, and five pictures were kindly donated by colleagues (Dr. Ghada Mohamed and Dr. Nesreen Magdy). At the end of the atlas is a “Picture Index” to help finding the picture of a given lesion by atlas page, chapter number, and serial number of the picture in the book. The atlas contains the following 16 sections:

Section 1. Developmental abnormalities

These are rare lesions resulting from exposure of the embryo to teratogenic agents. Their recognition is important since they may present as tumor-like mass lesions or lead to serious complications. The anomalies demonstrated include: aplasia, atresia, ectopia, dysplasia, midline defects and sequestration lesions, as well as, disordered sex development. For more details please refer to chapter 4 by MN EL-Bolkainy and Muhammad Zain in “Surgical Pathology” text book.

Section 2. Inflammation

The pathologic diagnosis of inflammation must include both the type and cause of inflammation. In this section the histologic features of acute inflammation, chronic nonspecific, and granulomas are presented. In addition diagnostic criteria of etiologic agents

(organism, autoimmunity, or foreign body) are outlined. More details are presented in chapter 5 by E Mandour.

Section 3. Infections

Despite the decline of infectious diseases as a cause of mortality in developed countries (3% to 10%), it is still very high in tropical Africa (63%). This section presents the diagnostic microscopic features of the infectious agents, as well as, their associated characteristic tissue reactions. However, confirmation of a specific organism require the identification of its genetic material by PCR in serum samples. Additional information is found in chapter 6 by HN Tawfik.

Section 4. Cell Degeneration and Death

In this section, common retrogressive changes are demonstrated (e.g. Apoptosis and necrosis), as well as, a miscellaneous group of unusual changes (e.g. autolysis, mitotic catastrophe, symplastic changes and Wallerian degeneration). For details please refer to chapter 7 by N Anwar.

Section 5. Vascular Diseases

Globally, vascular diseases constitute the leading cause of human mortality (28%). The pictures include common lesions (e.g. atherosclerosis, aneurysms, and thrombosis), as well as, unusual lesions such as vasculitis. For details, please refer to chapter 8 by A Abou-Bakr.

Section 6. Iatrogenic Lesions

These lesions may result from surgical treatment, irradiation, or chemotherapy. Examples of benign and malignant iatrogenic disorders are presented which are

commonly encountered in practice. For details please refer to chapter 9 by M Mourad.

Section 7. Autoimmune Diseases

Immune reactions to self antigens (intolerance) contribute about 2 to 5% of all human diseases. In this section, autoimmune diseases of surgical importance are displayed including: thyroid endocrinopathy, myasthenia gravis, type 1 diabetes mellitus, Mikulicz syndrome and ulcerative colitis. For details please refer to chapter 10 by HN Tawfic.

Section 8. Renal Transplantation Pathology

The kidney was selected as a model to describe the pathology of organ transplantation. The histopathology of acute rejection, chronic rejection and various complications are presented. Moreover, the updated Banff classification used to semiquantitate the rejection reaction is demonstrated. For details please refer to chapter 11 by MA EL-Baz.

Section 9. Disorders of Growth and Differentiation

Precursor lesions of carcinoma are a heterogeneous group including: metaplasia, dysplasia and carcinoma in situ. Proper classification and early detection of these lesions will assure cancer prevention. This section presents the updated diagnostic criteria of these lesions. Details are available in chapter 12 by MMF EL-Defdar.

Section 10. Histologic Classification of Neoplasms

Morphology, both gross and microscopic, remains the basic foundation for precise diagnosis of neoplasms. This section presents the histomorphologic fea-

tures of different classes of tumors based upon their cellular differentiation and expected behavior. Details are found in chapter 13 by TN EL-Bolkainy and AM Rabie.

Section 11. Grading of Therapy Response

Pathologic grading of therapy response of cancer is a valuable guide to therapeutic decision, as well as, prediction of prognosis. Various grading systems are available for different organ sites, but, in general it is important to study both tumor and lymph nodes for therapy response and to classify patients into three main groups, namely: no response, partial response and complete response. For details please refer to chapter 15 by IG Farahat.

Section 12. Special Techniques

Various techniques are available which are useful as ancillary investigations to support the pathologic diagnosis. These include: chromosomal methods, molecular genetics, next generation sequencing, flow cytometry, laser microdissection, image analysis, and protein analysis. In addition, immunophenotyping, and electron microscopy of malignant tumors are presented. For details please refer to chapter 16 by SS Eissa and S Shoman.

Section 13. Applied Molecular Genetics

In this section are presented examples of practical applications of molecular genetics (mainly FISH) for the diagnosis and prognosis of cancer. For details refer to chapter 17 by OM Badawy.

Section 14. Cancer Syndromes

About 5 to 10% of human cancers are syndromic. In this section, syndromes are classified according to organ systems and their importance in diagnosis and man-

agement are outlined. For details please refer to chapter 18 by N Anwar.

Section 15. Diagnostic Challenges and Pseudoneoplasms

The pathologist may be confronted with challenging cases which may lead to serious diagnostic errors. In this section are presented some of these difficult cases (mainly undifferentiated tumors and pseudoneoplasms) and work up to avoid pitfalls. For details please refer to chapter 19 by HA Ismail.

Section 16. A Rapid Guide to Immunostains

Immunohistochemistry is a complex and rapidly changing field. In this section, effective immunostains are presented in only nine tables to serve as a rapid guide to tumor phenotyping and risk assessment. Tables 1 to 5 covers diagnostic problems, whereas, 6 and 7 present challenging cases (undifferentiated tumors and metastases with unknown primary). Table 8 lists non-specific markers, which were originally considered specific for a single tumor type, but which later proved to be reactive with other tumors.

Finally, the multibox Table 9 lists Ki-67 rates which are useful for risk assessment of some common tumors. These abstract tables were prepared by AA Abou-Bakr. For detailed information on the subject, please refer to chapter 14 by MA Nouh and N Magdy, as well as, chapter 16 by SS Eissa and S shoman.

Acknowledgments

I am grateful to all my esteemed professional colleages, the chapter authors, for their wonderful contribution which constituted a solid scientific base for the present work. However, the preparation of the atlas required additional efforts including: review and additions to picture legends, formatting of pictures and matching of picture index with corresponding pages. Special thanks are due to my colleagues who volunteered to do this tedious job, namely: Profs. Amany Abou-Bakr, Omnia Badawy, and Drs. Nesreen Magdy, Ahmed Rabie and Muhammad Zain. Finally, thanks to EL-Dorra Printing Company, for the high-quality color printing of the pictures.

M. Nabil EL-Bolkainy
2018

Recent Key References

- Abbas A, Andrew A, and Pillai H (editors): Cellular and Molecular Immunology 9th edition, Elsevier Inc, 2017.
- Goldblum JR, Lamps LW, Mckenney JK, and Myers JL (editors): Rosai and Ackerman's Surgical Pathology, 11th edition, Elsevier Inc, 2018.
- Kumar V, Abbas AK, and Aster IC (editors): Robbins Basic Pathology, 3rd edition, Elsevier Inc, Philadelphia, USA, 2018.
- Lanza R and Atala A (editors): Essentials of Stem Cell Biology, 3rd edition, Elsevier Inc, 2018.
- Leonard DG (editor): Molecular Pathology in Clinical Practice: Genetics, 2nd edition, Springer USA, 2016.
- Mackay I and Rose N (editors): The Autoimmune Diseases, Elsevier Inc, 2013.
- Molavi DW (editor): The Practice of Surgical Pathology, 2nd edition, Springer International Publishing AG, 2018.
- Morris P and Knechtle S (editor): Kidney Transplantation, 7th edition, Amazon, 2014.
- Procop CW and Pritt RC (editors): Pathology of Infectious Diseases. Elsevier Saunders, Philadelphia PA, USA, 2015.
- Sadler TW (editor): Medical Embryology, 13th edition, Wolters Kluwer Health, 2015.
- Tuffaha MS, Guski H, and Kristiansen G (editors): Immunohistochemistry in Tumor Diagnosis. Springer International Publishing AG, 2018.
- WHO Histological Classification of Tumors, the new 4th edition series, IARC, Lyon, France (2014-2017).
- Wick MR, LiVolsi VA, Pfeifer JD, Stelow EB, and Wakely PE (editors): Silverberg's Principles and Practice of Surgical Pathology, 5th edition, Cambridge University Press, UK, 2015.

Contents

Chapter	Section		Page
4	1	Developmental Abnormalities	1
5	2	Inflammation	12
6	3	Infections	18
7	4	Cell Degeneration and Death	40
8	5	Vascular Disease	53
9	6	Iatrogenic Lesions	62
10	7	Autoimmune Disease	73
11	8	Renal Transplantation Pathology	78
12	9	Disorders of Growth and Differentiation	91
13	10	Histologic Classification of Tumors	103
15	11	Grading of Therapy Response of Cancer	164
16	12	Special Techniques in Pathology	169
17	13	Applied Molecular Genetics	188
18	14	Cancer Syndromes	190
19	15	Diagnostic Challenges and Pseudoneoplasms	194
	16	A Rapid Guide to Immunostains	223
		Picture Index	231

