

COLOR ATLAS
OF
UTERINE CANCER CYTOLOGY

FRANZ A. IKLÉ
M.D., FIAC

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5 Languages: English German
French Spanish Chinese



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COLOR ATLAS OF UTERINE CANCER CYTOLOGY

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Foreword

COLOR ATLAS UTERINE CANCER CYTOLOGY by Dr Franz A Ikle, M.D. and Yi-Jing Shu, M.D.

This substantial Atlas unique in its presentation in 5 languages is the result of Dr. Franz A Ikle's practice of gynaecological oncology, Cytologist and of Dr Yi-Jing Shu's endeavours in the field of diagnostic cytopathology. The two authors have combined together with a number of world experts acting as advisors to present a systematic study of the pathology of the uterine cervix and body.

This is Dr Shu's third book, the previous being "THE CYTOPATHOLOGY OF OESOPHAGEAL CANCER", a significant contribution to a disease prevalent in China and "THE CYTOPATHOLOGY OF MALIGNANT TUMOURS". While he has a number of monographs and publications in this field, his previous experience as a clinical gynaecologist then as a general histopathologist has given him a broad based background to general gynaecological pathology, while his specialisation in cytopathology over the past decade or more has made him a leading figure in this field in China and Deputy Head of the Cytopathology Department in the Cancer Institute in Peking and visiting Professor of certain American universities. His untiring efforts with this work has come to fruition with the valuable collaboration of the first author Professor Franz Ikle, a leading gynaecological oncologist who gives balance to this important field of approach.

The Atlas deals with the subject in a clear pragmatic way, illustrating the various cytopathological problems both inflammatory and neoplastic, that are encountered in every day diagnostic work. The authors have limited themselves to simple haematoxylin eosin stained section, albeit photographed in black and white and the Papanicolaou stain for cytology, which is the main purpose of this volume. They have illustrated some of the problem areas of cytological interpretation by a number of examples which provide the reader with a practical guide to interpretation. The examples, of disease states illustrated, come very largely from Dr Ikle's collection in Switzerland and are based on diligently followed up case material to ensure diagnostic accuracy. There is inevitable group of borderline lesions between atypical metaplasia and dysplasia being presented which as always presents a challenge and diagnostic debate but have been well chosen and discussed.

The volume presented in 5 languages provides a valuable contribution to this diagnostic field not only in Europe but to a wide audience of students and practicing cytopathologists throughout the World.

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Preface

Following the publication of Dr. George Papanicolou's and Trout's "The Diagnoses of Uterine Cancer by the Vaginal Smear" in 1943, a new era of cancer detection by cytological means was introduced and utilized throughout the world.

In 1951 "CANCER CYTOLOGY OF THE UTERUS" by Dr. J.E. Ayre heralded a further step in the field of gynecological cytology. To date, this book still Serves great value for technical and diagnostic purposes.

In the last 15 years, gynaecological cytology as well as non-gynaecological cytology have progressed and revealed a more complex depth with each advancement.

Presently, the Pap Smear is not only a powerful tool in prevention of invasive carcinoma of the Uterine Cervix, but also in detection of dysplasia and non-cancerous diseases. Utilization of this technique has therefore made possible, further etiologic and epidemiologic studies. This book is characterized in the following ways:

1. Focus on practical aspects of Cytodiagnosis in routine work and describes in detail, dysplasia, early carcinoma of the uterus and inflammatory conditions of the female genital tract. Special emphasis is placed on viral infections, Chlamydia, fungal infection, repair and reserve cell hyperplasia.
2. Described in five languages, this book offers to medical professionals throughout the world, the opportunity to learn in their original language.
3. The illustrations are reproduced with high quality color pictures. These photographs are shown in high magnification, enabling special residents and cytology students to observe the cell structure in detail.

We are greatly indebted for the generous support of the Publishing Foundation of the People's Medical Publishing House Beijing (peking), China and The Cancer Society of Switzerland land (Section St. Gallen-Appenzell).

Special thanks to Dr L. Koss for his continuous support and Dr J.R. Costa, Dr L. Wen and Mr. René Neidhart for their generous help. The credit given, must not only to the authors, but also to the contributors in five countries, who have cooperated in translating this material and to whom we owe our deepest gratitude.

Almost all of the staff members of the Krebsliga Cyto-Labor in St. Gallen, have contributed to this book, with special thanks to Rahel Iklé, Ellen Bradley, and Daniela Graf in assisting with the preparation of the manuscript.

This book is directed not only to the Pathologist and Cytotechnologist, but also to the Oncologist, Gynaecologist and the Clinician who must care for patients and decide the diagnostic approach and treatment.

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问

本书详细介绍子宫颈癌的癌前期病变和早期癌的诊断标准和分类；子宫内膜腺癌；女性生殖道炎症性病变，并着重介绍病毒性感染、储备细胞增生和修复细胞的细胞形态特征。

全书共分十八章，每章均以英文、德文、法文、西班牙和中文作章节内容的重点介绍和图解，是一本近代实用的高级参考书。

本书由中国、瑞士、西德、美国和西班牙等十二位教授和学者合作执笔，瑞士和中国学者主编，由中国人民卫生出版社与瑞士癌症协会合作出版，在香港印刷，国外售价65美元，国内售价从优。

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1. All the cases of precancerous lesion and carcinoma have been confirmed by histology.
The following terminology is based on histological diagnosis.
2. All histology slides were stained by H & E and smears, by Papanicolaou's stain.
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*(H) Histology

***NORMAL SQUAMOUS
EPITHELIUM AND CELLS***

1

NORMAL SQUAMOUS EPITHELIUM AND CELLS

A. NORMAL SQUAMOUS EPITHELIUM

During the reproductive years, normal squamous epithelium of the cervical portio is generated by proliferating immature cells of the germinal layer, which grow and mature, ultimately exfoliating from the epithelial surface. Squamous epithelium is composed of four zones:

1. Basal or germinal layer: a single row of cells which continually generates new epithelium.
2. Parabasal zone: possibly contributes to the epithelial growth.
3. Intermediate zone: dominant portion of the epithelium.
4. Superficial zone: most mature, cornifying layer which undergoes desquamation.

B. NORMAL SQUAMOUS CELLS

1. Basal cells: small round cells with large nuclei and granular chromatin pattern.
2. Parabasal cells: round or oval shaped with cyanophilic cytoplasm and vesicular nuclei. Commonly found in prepubertal and post-menopausal females, parabasal cells occur less frequently in women of reproductive age.
3. Intermediate cells: polygonal cells with cyanophilic cytoplasm and vesicular nuclei. Intermediate cells may vary somewhat in size, depending upon the degree of maturity. Immature intermediate cells are small, with dense, homogenous cytoplasm, while the larger, more mature cells have a less dense cytoplasm. Intermediate cells can be divided into three types, depending upon size:
 - A) Small intermediate.
 - B) Intermediate.
 - C) Large intermediate.
4. Superficial cells: polygonal cells with pyknotic nuclei. Typically, the cytoplasm stains eosinophilic but in some instances may be cyanophilic.
5. Anucleate squamous cells: eosinophilic superficial cells without "nuclear ghosts". (Patten, 1975) Cytoplasm may stain red, orange or yellow. Since anucleated squamous cells are not commonly found in the normal cervical smear, the presence of a large number of these cells may indicate hyperkeratosis, possibly induced by a pathological process. During the reproductive years, intermediate and superficial cells comprise the greater percentage of cells found in the routine specimen.

NORMALES PLATTENEPITHEL UND ZELLEN

A. NORMALES PLATTENEPITHEL IM BEREICH DER EKTOZERVIX (Portio vaginalis uteri)

Das Plattenepithel der Portio regeneriert sich wie dasjenige der Vagina dauernd aus unausgereiften Zellen der untersten Keimschicht. Die Zellen reifen und differenzieren sich kontinuierlich mit einer Umwandlungsfrist von zirka sechs Tagen um nachher oberflächlich abgestossen zu werden (Desquamation). Es lassen sich im Schnitt 4 Reifungszonen unterscheiden:

1. Die einreihige Basal - oder Keimschicht: Eine einschichtige Zelllage, welche fortlaufend das Epithel reproduziert.
2. Die parabasale Schicht, möglicherweise auch zur Reproduktion des Epithels beitragend.
3. Die Intermediärschicht: Dominierende Schicht des Epithels.
4. Die Superfizialschicht mit den ausgereiften, in der Regel verhornenden Plattenepithelzellen, welche dauernd abgestossen werden.

B. NORMALE PLATTENEPITHELZELLEN

1. Basalzellen: Kleine, rundliche Zellen mit grossen Kernen, fein granuliertem Chromatin und zyanophilem Zytoplasma.
2. Parabasalzellen: Rundliche oder ovaläre Zellen mit vesikulären Kernen und zyanophilem Zytoplasma. Häufig in der Praepubertät und Postmenopause, seltener im Gestationsalter.
3. Intermediärzellen: Polygonale Zellen mit zyanophilem Zytoplasma und vesikulären Kernen. Die Zellgrösse nimmt mit dem Reifegrad zu. Das Zytoplasma der unreifen Zellen ist dunkel-zyanophil, dasjenige der reiferen Zellen heller und transparenter. Intermediärzellen können in drei verschiedene Typen unterteilt werden:
 - A) Kleine Intermediärzellen
 - B) Intermediärzellen
 - C) Grosse Intermediärzellen
4. Superfizialzellen: Grosse, polygonale Zellen mit in der Regel eosinophilem, seltener hell zyanophilem, reichlichem Zytoplasma und kleinen pyknotischen Kernen.
5. Kernlose Superfizialzellen: Eosinophile Zellen ohne Kern oder Geisterzellen nach Patten (1975). Das Zytoplasma ist rot, orange oder gelb. Diese Zellen erscheinen kaum im normalen Abstrich und gelten als Hinweis auf abnorme Verhornung (Hyperkeratose/Parakeratose). Im Gestationsalter dominieren die Intermediär- und Superfizialzellen das normale Abstrichbild.

EPITHELIUM PAVIMENTEUX NORMAL ET SES CELLULES

A. EPITHELIUM PAVIMENTEUX NORMAL

Pendant la période de fertilité, l'épithélium pavimenteux normal du col utérin se régénère par division des cellules immatures de la couche basale. Ces cellules croissent, mûrissent et finalement desquament de la surface de l'épithélium. L'épithélium pavimenteux est composé de quatre zones:

1. Couche basale: formée par une seule rangée de cellules qui se divisent continuellement.
2. Couche parabasale: zone adjacente à la couche basale. On peut éventuellement y trouver des cellules en mitose.
3. Couche intermédiaire: couche prédominante de l'épithélium.
4. Couche superficielle: la plus mûre, de laquelle desquament les cellules.

B. CELLULES PAVIMENTEUSES NORMALES

1. Cellules basales: petites cellules rondes. Les noyaux sont grands, à chromatine finement granulaire. Ces cellules ne se rencontrent sur des frottis qu'en cas de lésion de l'épithélium.
2. Cellules parabasales: cellules rondes ou ovales à cytoplasme cyanophile et au noyau vésiculaire. On les trouve principalement chez la jeune fille avant la puberté et chez la femme post-ménopausée et plus rarement chez la femme en âge de procréer.
3. Cellules intermédiaires: cellules polygonales à cytoplasme cyanophile et au noyau vésiculaire. Selon le degré de maturation, la taille de ces cellules est variable. Les cellules intermédiaires immatures sont de petite taille avec un cytoplasme homogène et dense, alors que les plus mûres ont un cytoplasme transparent. De plus, ces cellules peuvent être divisées en trois groupes selon leur taille:
 - A) Petites cellules intermédiaires.
 - B) Cellules intermédiaires.
 - C) Grandes cellules intermédiaires.

4. Cellules superficielles: cellules polygonales au noyau pycnotique. En général, le cytoplasme est éosinophile, mais il peut être cyanophile dans certaines circonstances.
5. Cellules pavimenteuses anucléées: cellules superficielles à cytoplasme éosinophile sans noyau ou montrant un “noyau fantôme” (Patten, 1975). Le cytoplasme peut se colorer en rouge, orange ou jaune. Puisque les cellules pavimenteuses anucléées ne se trouvent pas d’ordinaire dans le frottis de dépistage, leur présence en grand nombre peut indiquer une hyperkératose induite par un processus pathologique. Pendant la période de fertilité, les cellules intermédiaires et superficielles représentent le plus grand pourcentage des cellules composant les frottis de dépistage.

EPITELIO Y CELULAS ESCAMOSAS NORMALES

A. EPITELIO ESCAMOSO NORMAL

Epitelio escamoso normal del exocérnix (portio). Durante los años de reproducción, el epitelio escamoso normal es generado por las células inmaduras de proliferación de la capa germinal. Estas células crecen y maduran, exfoliándose finalmente de la superficie epitelial.

El epitelio escamoso se compone de 4 zonas:

1. Zona basal o germinal. Una sola capa de células que genera continuamente epitelio nuevo.
2. Zona parabasal: posiblemente contribuye al crecimiento del epitelio.
3. Zona intermedia. Porción dominante del epitelio.
4. Zona superficial: Las más madura. Capa cornificante que se descama.

B. CELULAS ESCAMOSAS NORMALES

1. Células basales: pequeñas células redondas. Los núcleos son grandes y poseen un patrón de cromatina granular. Las células basales son raramente vistas y se encuentran sólo en casos en que el epitelio es dañado.
2. Células parabasales: poseen forma redonda u oval y un citoplasma cianófilo, además de núcleos vesiculares. Se encuentran comúnmente en las etapas pre-puberal y postmenopáusica de la mujer. Las células parabasales se observan poco frecuentemente en mujeres en edad reproductiva.
3. Células intermedias: células poligonales con citoplasma cianófilo y núcleos vesiculares. Las células intermedias varían en cierta forma en tamaño, dependiendo ello del grado de maduración. Las células intermedias inmaduras son pequeñas, con citoplasmas densos y homogéneos, mientras la célula más grande y madura presenta un citoplasma más transparente. Además, las células intermedias pueden dividirse en tres tipos, según tamaño celular:
 - A) Intermedias pequeñas.
 - B) Intermedias.
 - C) Intermedias grandes.
4. Células superficiales: Células poligonales con núcleos picnóticos. Generalmente, el citoplasma se tiñe eosinófilo pero en algunas instancias puede teñirse cianófilo.
5. Células escamosas anucleadas: células superficiales eosinófilas sin núcleo o con “sombra nuclear” (Patten, 1975). El citoplasma puede teñirse rojo, naranja o amarillo. Ya que las células escamosas anucleadas no se encuentran comúnmente en el frotis normal de cérvix, la presencia de un gran número de estas células indica hiperqueratosis, posiblemente inducida por un proceso patológico. Durante los años de reproducción, las células intermedias y superficiales comprenden el porcentaje mayor de células encontradas en el espécimen rutinario.

一、正常的鳞状上皮和细胞

A. 正常的鳞状上皮

生育期子宫颈的鳞状上皮是由幼稚的生发层细胞增生、繁殖、生长、成熟，直至从表层脱落。共由四层细胞组成。

- 1) 基底层或生发层 是一层不断繁殖新生上皮的细胞。
- 2) 副基底层 可能有促进上皮生长的作用。
- 3) 中层 上皮的主要组成部分。
- 4) 表层 成熟，角化直至脱落。

B. 正常鳞状细胞

1) 基底细胞 小圆形细胞。核大，染色质呈颗粒状。罕见，仅在上皮受损害的情况下出现。

2) 副基底细胞 圆形或卵圆形。嗜硷性胞浆，核结构疏松，常见于青春前期和绝经后期，很少见于生育期。

3) 中层细胞 多角形，嗜硷性胞浆。核疏松，细胞大小不一，取决于细胞成熟的程度。未成熟的细胞胞浆致密而均匀。细胞越趋向成熟，其体积越大，胞浆越趋向透明。根据细胞的大小不同，分为：

- a) 小中层细胞
- b) 中层细胞
- c) 大中层细胞

4) 表层细胞 多角形大方块细胞，核固缩。典型的是嗜酸性（红染）的胞浆。有时胞浆也可呈嗜硷性（蓝色）。

5) 无核鳞状细胞 嗜酸性的表层大方块细胞，无核或仅有核影，又称核鬼影 (Patten, 1975) 红染或呈橘黄色，正常涂片内少见。如这种细胞大量出现意味着上皮过度角化的病理过程。

生育年龄患者的常规涂片中主要由中、表层细胞组成。