Hughes, Mansel & Webster's

BENIGN DISORDERS AND DISEASES OF THE BREAST

THIRD EDITION

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Foreword by H. S. Cody III

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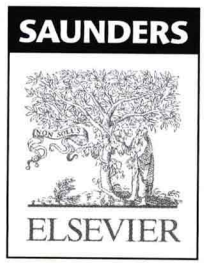

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Foreword

Benign breast disease comprises a wide range of conditions which worry patients, which vex physicians, which are vastly more common than breast cancer, and yet which have to date received relatively little attention in the medical literature. It is therefore a particular pleasure for me to introduce the third edition of *Hughes, Mansel & Webster's Benign Disorders and Diseases of the Breast*, a unique and classic work which fully succeeds in addressing this imbalance and builds on the substantial and well-deserved success of the first (1989) and second (2000) editions.

The authors correctly decry the term 'fibrocystic disease', proposing instead that benign breast conditions are not 'disease' *per se*, but are instead minor *aberrations of normal development and involution* ('ANDI'). The ANDI framework, for the first time, puts the study of benign breast disease on a scientific basis which correlates pathogenesis, histology and clinical features. This model is, in my opinion, a robust foundation for further progress in the understanding and treatment of benign breast disease, and deserves much wider recognition, particularly in the US, where it is relatively unknown.

Professor Mansel and his colleagues comprehensively address every aspect of benign breast disease following a format in which all elements (graphics, tables and photographs) work harmoniously to create a whole larger than the sum of its parts. Each chapter heading includes 'key points and new developments' for a quick summary of the contents. As in a Victorian novel, these chapter headings are irresistible and one cannot resist delving into the contents. Throughout, one benefits in equal measure from the authors' scholarship, from their long first-hand experience and from their refreshing practicality in managing benign breast disease.

One highlight of this edition is a remarkable chapter 'History of benign breast disease', which overviews the lives and careers of six great figures (Sir Astley Cooper, Alfred Velpeau, John Birkett, George Cheatle, Joseph Bloodgood and Charles Geschickter), with particular insight into the roles of mentorship, record keeping, acceptance of new technologies, pathologic correlation and the role of international travel and contacts. In an age information technology and instantaneous communication, these elements are more important than ever.

The role of surgery in benign breast disease is changing. Mammography, ultrasound and (increasingly) MRI offer the prospect of earlier cancer diagnosis but bring with them a substantial burden of benign or equivocal findings. Most are amenable to core biopsy but it remains challenging to identify those that do or do not need surgery. Surgical techniques for benign breast conditions may seem simple in concept, but the experienced surgeon will recognize that this simplicity is more apparent than real and that pitfalls abound. In closing, let me enthusiastically recommend the chapter 'Operations'. Here the authors address core biopsy (with and without image guidance) and the full range of surgical procedures for benign breast diseases, presenting a set of 'Important principles' for each. In these lists surgeons in training will recognize a treasury of clinical pearls drawn from the authors' vast hands-on experience, and practising surgeons will recognize their own past surgical misadventures which might have been avoided had these principles been followed. This chapter is a small classic in its own right and should be required reading for all surgeons who treat breast disease, benign or malignant.

Hiram S. Cody III

Preface

It is now 20 years since the first edition of this book and 9 since the second edition. The intervening years have seen advances in imaging technology, understanding of the molecular events leading to disease and drug developments. While most of the focus has been on breast cancer, there have been benefits to an understanding of the changes occurring in the breast from physiology through disorders to diseases.

One of the consequences of an improved understanding of what is happening in the breast and confidence in the ability to diagnose the problem actively has been the disappearance of open surgical diagnostic biopsy and, except for a few areas, surgery for benign conditions. The diagnostic pathway using triple assessment with core needle biopsy is now the standard in most breast clinics; it gives a 99% sensitivity for cancer and dramatically reduces operations for true benign disease.

Much work has been done in identifying patients with an increased risk of developing breast cancer and we have addressed this by including a new chapter on risk of breast cancer written by Professor Gareth Evans of Manchester. Family history is important here but apart from a few cases with atypical epithelial hyperplasia, benign change is not of itself an important determinant. Clinics, however, are dominated by the concern to exclude cancer and to determine future risk.

The imaging chapter has been extensively revised by Kate Gower-Thomas and the xeromammograms have been replaced with modern digital mammograms.

Plastic surgery for both augmentation and reduction is now so well detailed in the plastic surgery literature that we have omitted this chapter; similarly, the chapter on geographical variation has been subsumed into the chapters about individual problems.

Professor Leslie Hughes has provided a fascinating chapter on the lives and influences of some of the great names in the development of our understanding of the changes in the breast.

The ANDI concept provides a framework to enable clinicians to explain to patients the nature of their problem in an easily assimilated way. It is important to emphasise that ANDI is not a diagnosis in itself.

REM, DJTW, HS
January 2009

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We are much indebted to co-operation from the Departments of Radiology – especially Dr Huw Gravelle and Dr Kathleen Lyons, and of Pathology – especially Drs Winsor Fortt and Tony Douglas-Jones. This book could not have been produced without the exceptional service given by the Department of Medical Illustration under Professor R. Marshall and now Professor R. Morton.

The secretarial staff of the University Department of Surgery, both clinical and academic, have facilitated all aspects of the clinical and research work and documentation behind the book, and Mrs Edna Lewis has given many years of voluntary service to the Mastalgia Clinic.

Above all we are grateful to our families who have foregone so much over many years in the cause of research and the writing of this book.

THIS BOOK IS DEDICATED TO

CD Haagensen
Surgeon Pathologist

JD Azzopardi
Surgical Pathologist

Whose meticulous studies have cast so much light on breast disorders, and whose monographs are quoted so freely in this book

IH Gravelle
Radiologist

Friend, colleague, an imaging pioneer, who enthusiastically joined us in this project to integrate structure and function in benign disorders of the breast.

CHAPTER 1

Problems of concept and nomenclature of benign disorders of the breast

Key points and new developments

1. Only by taking a historical view of benign disorders of the breast can the confusion persisting until recent decades be understood.
2. In the past, benign conditions (and the patients carrying them) have been regarded as requiring exclusion of cancer or cancer risk, rather than entities requiring management in their own right.
3. Clinical conditions, such as painful nodularity, have been equated with and confused with histological conditions, such as fibrosis or hyperplasia.
4. Most accept that the concepts and terminology of 'fibrocystic disease' and 'fibroadenosis' cannot be justified, but this recognition has so far been matched by masterly inactivity.
5. Accurate and meaningful terminology will be achieved only if those in the field agree on one and accept it and use it. The aberrations of normal development and involution (ANDI) concept and terminology provides a means of achieving this.

The source of the problem

The condition commonly called fibrocystic disease, or fibroadenosis of the breast, has been a clinical problem for centuries, as reflected in writings as early as those of Astley Cooper at the beginning of the nineteenth century. For patients, it causes discomfort and anxiety which varies from nuisance value to serious interference with their quality of life. For clinicians, the condition causes a range of problems of diagnosis, assessment and management which are not always clearly recognized.

Although all clinicians have a concept of what fibrocystic disease represents, it is difficult to define, and none of its protagonists has given a meaningful differentiation between it and normality. One definition[1] is 'palpable lumps in the breast, usually associated with pain and tenderness that fluctuate with the menstrual cycle and become progressively worse until the menopause'. Despite giving a definition, this author, like many before him, states that the term fibrocystic disease has no real meaning and should probably be abandoned. Nevertheless, he also lists the histological features, fibroadenomas, macrocysts, fibrosis, duct dilatation and stasis, periductal round cell infiltrate, fat necrosis, papillomatosis, apocrine metaplasia, sclerosing adenosis and hyperplastic lesions of duct and lobule. This covers the whole range of benign conditions of the breast, and it is clearly inappropriate to equate this histological panorama with a mild, or even severe, degree of painful nodularity.

With such a loose equivalence between clinical and histological detail, it is not surprising that Foote and Stewart wrote in 1945: 'chronic cystic mastitis is so ingrained in the minds of some pathologists that this diagnosis of a locally excised portion of the breast almost amounts to a surgico-pathological reflex'.[2] What is surprising is that pathologists are still the most insistent

single group to maintain the use of the term, despite this stinging remark from eminent members of their own discipline.

Greater interest in benign breast disorders in recent years has led to a more precise understanding of the clinical pictures associated with individual elements, and the histological changes of cyclical nodularity are increasingly recognized as lying within the range of histological appearance in the normal breast. Many authors have tried to determine and assess premalignant potential of fibrocystic disease but most attempts have resulted in confusion and frustration. Recent workers, especially Page and co-workers,[3,4] have shown that only a few specific histological patterns have an association with cancer and these show no consistent correlation with the clinical picture which in the past has been ascribed to fibrocystic disease. This poor correlation between histology and clinical symptoms led Love and her co-authors[5] to conclude that fibrocystic disease of the breast is a 'non-disease'. Their arguments are cogent in a histological context by denying the loosely defined cancer risk, but a concept of non-disease does little to help the many women who suffer from a variety of physical symptoms – sometimes of distressing severity. Disorder is a better term than disease because so many of the symptomatic conditions lie within the spectrum of normality. The magnitude of the problem is escalating with the wider concern of women about breast disease and the wider introduction of breast screening programmes.

Benign conditions of the breast have always been neglected in comparison to cancer, despite the fact that only one out of ten patients presenting to a breast clinic suffers from cancer. This is not surprising in view of the emotional implications of breast cancer and its treatment, but it has meant that the study of the benign breast has been undeservedly neglected. Until the 1970s, reported studies were directed largely towards a possible relationship to cancer, rather than towards the basic processes underlying benign conditions.

There has been a noticeable and welcome correction to this neglect in recent years, but already the interest in benign disorders evident for two decades is again on the wane, at a time when advances in molecular biology give promise of understanding the basic physiology of human breast development, function and involution.

This neglect is most evident in standard textbooks (the most recent comprehensive texts on breast disease devote less than 5% of their material to benign conditions) because interest in benign processes can be found when studying historical reference material. Great names in surgery such as Hunter, Astley Cooper, Billroth, Cheatle, Semb, Bloodgood and Atkins appear in the literature. But whereas breast cancer has stimulated a continuous, ongoing body of research – each new project building on the work preceding it – benign disease has been the subject of a relatively small number of isolated and unconnected projects, earlier related work having often been ignored. The sporadic nature of these investigations and the insularity of the resulting publications had led to much confusion which has had more serious consequences than neglect alone.

Consideration of benign breast disorders from a historical point of view provides a clearer understanding of how the present problems have arisen.

History

Sir Astley Cooper was an important early worker in this field. He described many aspects of benign breast disorders as well as malignant disease in his monograph, *Illustrations of Diseases of the Breast*,[6] published in 1829. Among the conditions discussed are cystic disease, pain and fibroadenoma. He distinguished two main groups of patients with mastalgia – those with and those without a palpable tumour, which we might now better define as painful nodularity and non-cyclical breast pain. He also laid much of the basis of the macroscopic anatomy of the breast in his book on the anatomy of diseases of the breast published in 1845. The French surgeon Reclus gave an excellent description of the clinical and pathological aspects of cystic disease in 1893, recognizing both the multiplicity and bilaterality of the cysts.[7]

Many of the current problems in terminology and understanding derive from the publications of German surgeons in the late nineteenth century. Koenig[8] called the disease 'chronic cystic mastitis', because he believed it had an inflammatory basis. At the same time, Schimmelbusch[9] described the same condition, compounding the problem by calling it 'cystadenoma'. Both authors gave the disease inexact names, and both gave incomplete descriptions of the pathology. Certainly they did not recognize the wide range of histological appearances found in these breasts, and they failed to recognize these as merely variants of normal processes within the breast.

There was an early reaction to this confusion. Cabot[10] questioned the inflammatory connotation of the term chronic cystic mastitis and urged more precise terminology, but unfortunately his pleas fell on stony ground. In the 1920s there were major studies by Semb[11] in Norway and Cheatle and Cutler[12] in the UK and their disease descriptions and data are still worth serious study. However, Cheatle and Cutler gave the name 'cystiphorous desquamative epithelial hyperplasia' to the clinical spectrum we have termed aberrations of normal development and involution in Chapter 3 and this can hardly be regarded as helpful. The tendency of the Scandinavians to use Semb's term 'fibroadenomatosis' also caused difficulty because of its confusion with the term fibroadenoma.[11] In spite of detailed investigations, Cheatle and Cutler confused changes of cyclical nodularity with both duct ectasia and fibroadenomas[12] and the term they finally chose – 'mazoplasia' – is hardly evocative in a descriptive sense.

While most workers concentrated on the clinical problems of fibrocystic disease, some gave accurate descriptions of other benign breast conditions. The paper on 'the varicocele tumour' by Bloodgood is a striking account of the clinical and macropathological aspects of duct ectasia and its clinical variants.[13] The accuracy and detail of the observations come as a surprise to those who believe advances in medical understanding are recent.

Special clinics for breast disease set up by Atkins in London and Geschickter in the USA concentrated experience and allowed adequate documentation and assessment of the results of treatment for the first time during the 1940s. Both authors made many contributions to benign breast disorders,[14,15] but suffered equally from the limited knowledge at that time of basic pathology and endocrinology of the breast. They both unfortunately continued the use of the term chronic mastitis. The 50 years since their contributions has seen an increasing momentum in investigation of benign breast conditions. Great benefit has derived from histological study of the normal breast and the development of hormonal estimations using radioimmunoassay. In particular, the autopsy study of Sandison[16] showed that most of the changes previously regarded as disease are so common as to be within the spectrum of normality, and his work stimulated others to define the wide range of histological appearances of the normal breast. For example, Parks[17] studied both surgical and autopsy specimens and showed a gradation between normal lobules and fibroadenomas, and between involuting lobules and cyst formation. He also showed that papillary epithelial hyperplasia of the terminal ducts is so common in the premenopausal period as to be regarded as normal, and that these lesions regress without treatment after the menopause. In 1961, Oberman and French[18] also stressed the concept of a continuum between normality and benign conditions: 'adenofibromas, fibrocystic disease and intraductal papillomas do not appear to represent distinct entities, but rather form a spectrum of conditions having their basis in an abnormality between hormonal stimulus to the breast, principally estrogen, and stromal and epithelial response'.

These writers have had a profound insight into the concepts discussed in this book, and it is salutary to go back even further. In 1922, McFarland[19] wrote: 'The so-called chronic mastitis is not inflammatory, and is not a pathological entity; it is nothing but a result – or at most a perversion – of involution. The only difficulty lies in clearly defining when the process of involution can be said to become abnormal, when it is so diversified.' The seed scattered by these workers has largely fallen on stony ground.

The present and the future

In the past, each worker has tended to introduce their own terminology for a condition, either to stress a particular aspect they have noted, or through ignorance of work that has gone on perhaps many years before. As an illustration of this, Table 1.1 shows the large number of names that have been associated with just three conditions: so-called fibrocystic disease, duct ectasia and giant fibroadenomas.

This list is by no means comprehensive; some 40 names have been used to describe the variety of conditions covered by the old term, chronic fibrocystic disease, none of which can be considered satisfactory.

Because of their multiplicity and lack of specificity, past terms are better replaced by the use of clinical or histological terms which are specific and accurate in relation to the clinical and/or histological condition to which they refer. Examples of appropriate clinical terms are mastalgia and cyclical nodularity. Examples of appropriate histological terms that have evolved over recent years are sclerosing adenosis and atypical ductal hyperplasia. Terms that accurately reflect both clinical and histological

Table 1.1 Some of the names used for common benign breast disorders

CYCLICAL NODULARITY
Fibrocystic disease
Fibroadenosis
Cystic hyperplasia
Hyperplastic cystic disease
Schimmelbusch's disease
Chronic cystic mastitis
Cystic mastopathy
DUCT ECTASIA/PERIDUCTAL MASTITIS
Plasma cell mastitis
Varicocele tumour
Comedo mastitis
Mastitis obliterans
Secretory disease
GIANT FIBROADENOMATOUS TUMOURS
Giant fibroadenoma
Cystosarcoma phyllodes
Phyllodes tumour
Juvenile fibroadenoma
Serocystic disease of Brodie

counterparts are fibroadenoma, duct papilloma and macrocyst, for example.

When it is desirable to cover the whole range of (unspecified) benign breast disorders, it is appropriate to use a term which, unlike fibrocystic disease, does not imply a disease state, but acknowledges the spectrum of change extending from normality and recognizes that most of the spectrum does not represent disease. We suggest that 'aberrations of normal development and involution' (ANDI) is a term which meets these criteria; it is comprehensive, and meaningful and descriptive in terms of pathogenesis.

Why has it taken so long to reach a reasonable understanding of the processes involved in benign breast conditions? The main stumbling block has been the failure to appreciate the range of basic physiological and structural changes within the normal breast – an organ dynamic throughout the reproductive period of life as it first develops, then undergoes repeated cyclical change and finally involutes. Because it is an organ under systemic hormonal influence, one would expect the breast to be uniform throughout in its appearance and behaviour, but this is not so. Like other endocrine target organs such as the thyroid, it varies greatly from one part to another, and end-organ response must be a factor in this variability. It has been usual practice to concentrate on the local findings as shown by biopsy, at one point in time when the patient presents with a clinical problem, assuming that the particular clinical condition at that time is directly associated with the local radiological and biopsy findings. It is tempting to ignore the findings of Parks and Sandison and others that all these apparently specific findings are frequently found in asymptomatic breasts. So a particular clinical event that leads a patient to biopsy must be assessed against the background of this almost random variation in histological appearance which is a part of normality.

A further source of confusion has arisen from the association of radiological appearances with pathological descriptions, without adequate correlative studies to establish a relationship. An example from recent decades has been the description of radiological density as 'dysplasia' in relation to Wolfe patterns – when detailed study can show that density is unrelated to epithelial dysplasia.[20] The situation was then compounded by using the term 'dysplastic breast' for a radiological pattern, without histological correlation or confirmation. The welfare of the patient with benign breast problems will be best served by abandoning terminology that implies disease, and substituting terminology which reflects the normality of many of the underlying processes, reserving 'disease' for those conditions where clinical morbidity or histological significance warrants such a term. The terminology should come from consideration of the basic physiological and pathological processes that lead a patient to present to a breast clinic.

Perhaps the reason for persisting and increasing confusion is an unwillingness to be sufficiently radical in moving away from ideas that do not fit in with present knowledge. Not only must the concept of fibrocystic disease as a clinical concept or a histopathological entity be done away with, it must be replaced by an accurate terminology consistent with present knowledge. Many breast physicians accept the first half of this statement, but are unwilling to accept the corollary inherent in the second half.

These basic aspects of the non-malignant breast, and the arguments for the aberrations of normal development and involution terminology, are considered in Chapter 4.