Best Practice & Research Clinical Obstetrics and Gynaecology 29 (2015) 767–775

Contents lists available at ScienceDirect

Best Practice & Research Clinical Obstetrics and Gynaecology

journal homepage: www.elsevier.com/locate/bpobgyn

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Principles of Cancer Staging for Clinical Obstetrics and Gynecology

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Keywords:
staging
prognosis
disease extent
tumor profile
management scenario
prognostic factor

Cancer represents a complex group of diseases characterized by uncontrolled growth and the ability to metastasize. Cancer may affect any part of the body, and within the female reproductive systems, there exist a variety of cancers each associated with different presenting symptoms, clinical course, etiology, and natural history of disease. The essential features of each cancer include the presenting site of disease (topography), the histopathologic (morphology), molecular and genetic tumor profile, and the anatomic disease extent (stage). Without knowing these features, it is impossible to discuss investigation, treatment, and prognosis in cancer.

Introduction

Cancer represents a complex group of diseases characterized by uncontrolled growth and the ability to metastasize. Cancer may affect any part of the body, and within the female reproductive systems, there exist a variety of cancers each associated with different presenting symptoms, clinical course, etiology, and natural history of disease. The essential features of each cancer include the presenting site of disease (topography), the histopathologic (morphology), molecular and genetic tumor profile, and the anatomic disease extent (stage). Without knowing these features, it is impossible to discuss investigation, treatment, and prognosis in cancer [1].

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http://dx.doi.org/10.1016/j.bpobgyn.2015.05.003
1521-6934/

Classification: Taxonomy

Taxonomy is the science or practice of classification. It creates a framework for discussion, analysis, and information recording. In science, to facilitate the communication of findings, scientists must first give names to the subjects of their study and then arrange them in some order. This process of naming and arranging falls under the general rubric termed classification. Classification can be defined as a descriptive arrangement to enhance and enable communication and consistent identification to facilitate activities underpinning information storage and retrieval; the latter include such activities as compiling or retrieving categorical information in computer databases or internet searching to enhance clinical care, research and oncology administration, and cancer control. Such classifications are termed systematics and date back to the beginning of the biological studies by Aristotle about 300 B.C. that represented the first evidence of systematic classification in the animal world. Other recognized fathers of taxonomy or classification include Carolus Linnaeus who published the classification of living things in the 18th century. Furthermore, John Fothergill established the staging classification for diphtheria in which disease progression from stage I through to stage III corresponded to the severity of the disease, and it was the first recognized classification of disease severity [2].

Clinicians have classified all types of diseases for >80 years. The original classification of presenting diseases continues as the International Classification of Diseases (ICD) [2]. The World Health Organization (WHO) states, "… The International Classification of Diseases (ICD) is the standard diagnostic tool for epidemiology, health management and clinical purposes. This is used as a basis to analyze the general health of population groups. It is used to monitor the incidence and prevalence of diseases and other health problems, proving a picture of the general health of countries and populations." The ICD is currently under revision, and the new release of ICD 11 is planned for 2017 [3].

The ICD is further supplemented by the histopathologic classification, the International Classification of Diseases for Oncology (ICDO). The ICDO was developed mainly for use by tumor registries to code both the site (as per ICD10) and morphology of tumors. WHO states, "… The morphology axis provides five-digit codes ranging from M-8000/0 to M-9989/3 [3,4]. The first four digits indicate the specific histological term. The fifth digit after the slash (/) is the behaviour code, which indicates whether a tumor is malignant, benign, in situ, or uncertain (whether benign or malignant). A separate one-digit code is also provided for histologic grading (differentiation)…."

The WHO Family of International Classifications (WHO-FIC) includes classifications endorsed by WHO to describe various aspects of the health and the health system. The aim of the FIC is to develop reliable statistical systems to improve health status and health care. The FIC classifies death, disease, functioning, disability, and health and health interventions (Fig. 1).

History of cancer staging

It has been recognized for many years that, in addition to topography and histopathology, the anatomic extent of disease is an important determinant of cancer prognosis, and that patients who present with extensive disease fare worse than those whose disease is much more localized. The classification of anatomic extent of disease is considered the "stage of disease." [2].

One of the first formal attempts to classify stages in cancer was by the Radiological Sub-Commission of the Cancer Commission of the League of Nations Health Committee who wished to report cervical cancer treatment results. The group realized that it would only be possible to report results if disease extent was recorded in a uniform way, and those cases were grouped into different stages according to the extent of growth. Cancer of the uterine cervix thereby represents one of the first cancers for which a staging classification was developed. The first report was accepted and published in April 1929, and the system was known as the League of Nations staging system for cervical cancer. Since then, there have been numerous attempts to classify disease and extent in cancer. As noted earlier, the site of cancer is classified by the WHO ICD, histologic type by the WHO International Classification of Tumours and by the International Agency for Cancer Research (IARC), and the stage of cancer is classified by the TNM Classification maintained by the Union for International Cancer Control (UICC) and by the American Joint Committee on Cancer (AJCC). In gynecologic cancers, the International Federation of Gynecology and Obstetrics (FIGO) has maintained their own staging classification for >70 years. The International