Clinica Chimica Acta 440 (2015) 143–151

Contents lists available at ScienceDirect

Clinica Chimica Acta

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

Invited critical review

# ROMA, an algorithm for ovarian cancer

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ARTICLE INFO

*Article history:*
Received 1 August 2014
Received in revised form 3 November 2014
Accepted 14 November 2014
Available online 20 November 2014

*Keywords:*
ROMA
HE4
CA 125
Ovarian cancer

ABSTRACT

Improvement of survival in ovarian cancer may be achieved through early diagnosis and modification of treatment. Although abnormalities in the adnexal region are frequently observed in transvaginal ultrasound, interpretation may be equivocal in some cases. If neoplastic tumor is suspected, a wide range of tests and algorithms may be applied. Risk of Malignancy Algorithm (ROMA), as first described by Moore in 2009, is one of the most popular approaches. The clinical utility of this regression model has been demonstrated in both pre- (75.6% sensitivity and 74.8% specificity) and post-menopausal (92.3% sensitivity and 74.7% specificity) women. These findings have been independently confirmed in a number of publications. The sensitivity and specificity of ROMA may, however, be improved with inclusion of supplemental data, such as age and ultrasound findings. Because of its simplicity, ROMA is a reliable tool characterized by high accuracy and reproducibility to stratify patients into a high or a low ovarian cancer risk.



**Contents**



## 1. Introduction

### 1.1. Ovarian cancer

Ovarian cancer is responsible for the largest number of deaths due to gynecologic tumors in Europe and North America. It ranks second after cervical cancer worldwide. Approximately 85–90% of malignant ovarian tumors are epithelial tumors. It is estimated that ovarian cancer affects 238,719 women worldwide and causes more than 150,000 deaths annually. This ranks ovarian cancer in seventh place in terms of incidence among malignant tumors in women and eighth with respect to death due to malignant tumors in women worldwide. Globally, it accounts for about 4% of all new malignant tumors among women. In developed countries, ovarian cancer ranks fifth in incidence (99,752 cases per year) and sixth in mortality (65,892 deaths per year) for malignant tumors among women (Fig. 1) [1]. Clinical symptoms are not well manifested in early stages of the disease, resulting in late diagnosis and poor prognosis. Five-year survival in ovarian cancer ranges from 30 to 50%, with considerable variation depending on a clinical stage: up to 70% for FIGO stage I (tumor confined to the ovaries) and FIGO II (tumor involves one or both ovaries with pelvic involvement — below the pelvic brim), and only about 20–40% for FIGO stage III (tumor involves one or both ovaries with cytological or histological confirmed spread to the peritoneum outside the pelvis and/or metastases to the retroperitoneal lymph nodes) and FIGO stage IV (distant metastases other than

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http://dx.doi.org/10.1016/j.cca.2014.11.015
0009-8981/

peritoneal metastases) [2]. Possible improvement of survival may be related to better diagnostics at an early stage of the disease and advances in treatment in view of its pathogenesis and its biologic heterogeneity [3].

### 1.2. Various diagnostic algorithms for ovarian cancer

Abnormalities of adnexal region are frequently observed in transvaginal ultrasound. To a large extent these lesions are benign. As

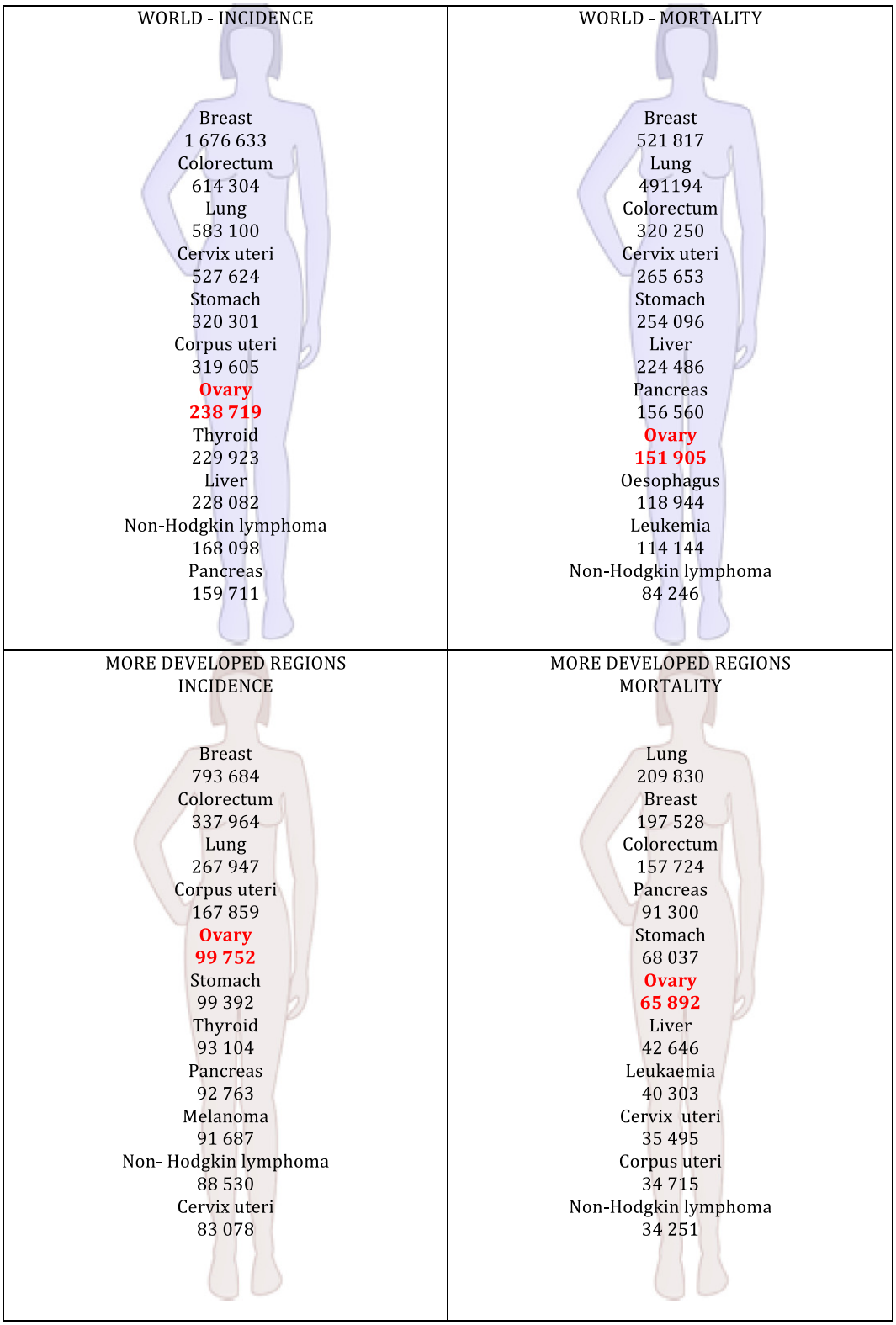


**Fig. 1.** Cancer incidence and mortality in women populations.