STAGING OF GASTRIC CARCINOMA WITH MULTI DETECTOR CT

Thesis
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By

Youstina Gerges Shokry Ibrahim
M.B.,B.Ch.
Faculty of medicine
Cairo University

Supervised by

Prof. Dr. Hani Ahmad Sami
Professor of Radiodiagnosis
Faculty of medicine
Cairo University

Prof. Dr. Samira Abdalah Mahmoud Salem
Professor of Pathology
Faculty of medicine
Cairo University

Dr. Maryse Youssef Awadallah
Lecturer of Radiodiagnosis
Faculty of medicine
Cairo University

Faculty of medicine
Cairo University
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Abstract

Multi-detector CT (MDCT) is a powerful tool for non-invasive evaluation of gastric cancer. MDCT not only detect primary tumors but also provide comprehensive staging, with accurate assessment of the neoplastic mass, regional and distant lymphadenopathy, and distant metastasis. Current MDCT with multiplanar reconstruction (MPR) images increased the accuracy of staging of gastric cancer. Thus, MDCT with MPR provides a useful diagnostic method for the pre-operative evaluation of patients with known gastric cancer.

Keywords: multidetector CT - gastric - lymphadenopathy – metastasis - multiplanar reconstruction

List of Abbreviations

AGC	Advanced Gastric Carcinoma
AJCC	American Joint Committee on Cancer
3D	Three dimensional
2D	Two dimensional
EGC	Early Gastric Carcinoma
EUS	Endoscopic Ultrasound
Fig	Figure
H&E stain	Hematoxylin and eosin stain
HU	Hounsfield unit
LN	Lymph Nodes
MDCT	Multi Detector Computed Tomography
MPR	Multi Planar Reconstruction
PET/CT	Positron Emission Tomography-Computed Tomography
WHO	World Health Organization

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INTRODUCTION

Radiology plays an essential role in the diagnosis, staging and surveillance of oncology patients. CT is the most commonly utilized imaging modality in the work up of these patients ***(Moron et al., 2007)***.

Gastric cancer is the 4th most common cancer and the 2nd leading cause of cancer-related deaths worldwide after lung cancer (the first common deadly cancer) ***(Kamangar et al., 2006).*** Despite a steady decline in the incidence rate over the last few decades, the absolute incidence has risen due to the aging of the worldwide population ***(Parkin et al., 2005)***. The incidence of gastric cancer is particularly common in eastern Asia ***(Moore et al., 2010).***

Chronic inflammation (especially chronic Helicobacter pylori infection), exposure to diverse carcinogens, and genetic susceptibility are among factors associated with an increased risk of gastric cancer ***(Han and Lauwers, 2010).***

The tumor-node metastasis (TNM) staging system is one of the most commonly used staging systems. The TNM system is well known to effectively predict the prognosis of gastric cancer patients ***(Lee et al., 2012).***

In the past, double-contrast barium examination and upper gastrointestinal endoscopy were used for the assessment of gastric cancer. Currently, the standard imaging methods for gastric cancer are endoscopic ultrasonography (EUS), computed tomography (CT), magnetic resonance imaging (MRI), and diagnostic laparoscopy. Each modality has strengths and weaknesses in diagnosing and staging disease for treatment planning ***(Byrne et al., 2002)***.

CT has been used for pre-operative staging work ups, including assessment of liver metastases and distant spread after endoscopic evaluation. Current multi-detector row CT with thin collimation provides isotropic imaging, which allows marked improvement of imaging resolution, especially in multi-planar reconstruction (MPR) images. Some studies have reported that MDCT with MPR images increases the accuracy of T staging in patients with gastric cancer ***(Kim AY,et al. 2005; Chen et al., 2007).*** Thus, MDCT with MPR images are used as a routine protocol for gastric cancer staging ***(Lee et al., 2012).***

This study mainly discusses the pre-therapeutic staging of gastric carcinoma based on TNM staging system with MDCT, including MPR images, and a brief review of the current management of gastric cancer.

AIM OF THE WORK

The aim of this work is to evaluate the role of multidetector CT with MPR images in the staging of gastric carcinoma.