

Pathology 2016: Evaluation of receptor for advanced glycation end products (RAGE) in Helicobacter pylori associated and non-associated gastric carcinoma – Tarek Aboushousha - Theodor Bilharz Research Institute, Egypt.

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Objective: Gastric cancer is one of the most common malignant tumors and the second leading cause of cancer death worldwide. Helicobacter pylori plays an important role in the pathogenesis of chronic gastritis and gastric adenocarcinoma. Receptor for Advanced Glycation End products (RAGE) is a pattern recognition receptor that binds to multiple ligands derived from a damaged cellular environment and plays an essential role in promoting intestinal tumorigenesis. Therefore, the aim of this study was to evaluate the expression of the RAGE protein in gastric carcinomas associated or not with Helicobacter pylori infestation.

Stomach cancer usually starts in the mucus-producing cells that line the stomach. This type of cancer is called adenocarcinoma. Over the past few decades, cancer rates in the main part of the stomach (stomach body) have declined around the world. During the same period, cancer in the area where the upper part of the stomach (cardia) meets the lower end of the swallowing tube (esophagus) has become much more common. This zone of the stomach is called the gastroesophageal junction. Usually cancer begins when an error (mutation) occurs in the DNA of a cell. The mutation causes the cell to grow and divide at a rapid rate and continue to live when a normal cell dies. The cancer cells that accumulate form a tumor that can invade nearby structures. And cancer cells can break away from the tumor to spread throughout the body.

Cancer of the gastroesophageal junction is associated with gastrointestinal reflux disease (GERD) and, less strongly, with obesity and smoking. GERD is a condition caused by frequent reflux of stomach acid into the esophagus. The stomach is a J-shaped structure in the superior abdomen. It is fragment of the digestive system, which routes nutrients (vitamins, minerals, carbohydrates, fats, proteins, and water) in foods that are annoyed and helps pass excess material out of the body. Food swaps from the throat to the stomach through a hollow, muscular tube termed the esophagus. After separation the stomach, partly-digested food permits into the small intestine and formerly into the large intestine. There is a strong correlation between a diet rich in

smoked and salty foods and stomach cancer located in the main part of the stomach. As the use of refrigeration for food preservation has increased around the world, rates of stomach cancer have declined.

Prevention

It is not known what causes gastroesophageal junction or stomach cancer, so there is no way to prevent it. But there are steps you can take to lower your risk of gastroesophageal junction cancer and stomach cancer by making small changes in your daily life. For example, try to: Exercise. Regular exercise is allied with a reduced risk of stomach cancer. Try to make physical activity part of your day most days of the week Eat more fruits and vegetables. Try to integrate more fruits and vegetables into your nutrition each day. Choose an extensive variation of colorful fruits and vegetables. Cut down on the amount of salty and smoked foods you eat. Protect your stomach by limiting these foods. Stop smoking. If you smoke, quit. If you don't smoke, don't start. Smoking increases your risk for stomach cancer, as well as many other types of cancer. Quitting smoking can be very difficult, so get help from your doctor.

The process used to tell if cancer has spread to the stomach or to other parts of the body is called staging. The information congregated from the staging process regulates the stage of the disease. Knowing the stage is important to plan treatment.

The following tests and procedures can be used in the preparation process:

Endoscopic ultrasound (EUS): A process in which an endoscope is implanted into the body, usually through the mouth or rectum. An endoscope is a thin, tube-shaped instrument with a light and a lens for viewing. A probe at the end of the endoscope is used to bounce high energy sound waves (ultrasound) off internal tissues or organs and produce echoes. Echoes form an image of body tissue called an ultrasound. This procedure is also called endosonography.

CT scan (CAT scan): A procedure that takes a series of detailed images of areas inside the body, such as the chest, abdomen, or pelvis, taken from different angles.

The images are taken by a computer connected to an X-ray machine. A dye can be injected into a vein or swallowed to help organs or tissues appear more clearly. This procedure is also called computed tomography, computed tomography, or computed axial tomography.

Gadolinium Magnetic Resonance Imaging (MRI): A procedure that uses a magnet, radio waves, and a computer to take a series of detailed images of areas inside the body. A constituent called gadolinium is inoculated into a vein. Gadolinium builds up around cancer cells so that they appear lighter in the image. This process is also termed nuclear magnetic resonance imaging (NMRI).

Laparoscopy: Surgery to examine the organs inside the abdomen to check for signs of disease. Small incisions (cuts) are completed in the wall of the stomach and a laparoscope (a thin, lighted tube) is inserted into one of the incisions. Other procedures can be performed through the same or other incisions to perform procedures such as organ harvesting or taking tissue samples to be checked under a microscope for signs of cancer. A solution can be washed onto the surface of organs in the abdomen and then removed to collect cells. These cells are also examined under a microscope to look for signs of cancer.

Methods: Cases of gastric carcinoma, intestinal metaplasia and chronic gastritis were included in this study. Immunohistochemical staining for RAGE was performed and its expression was assessed and discussed.

RESULTS: RAGE was not expressed in any gastritis or gastric signet ring carcinoma, however, it was expressed in most cases of intestinal metaplasia. In gastric adenocarcinoma, the percentage and score of RAGE cell expression were inversely correlated with the grade of neoplasia, while the intensity of RAGE was higher in cases of positive lymph node metastases. Our results do not show any correlation between RAGE expression and *H. pylori* infection, either in chronic gastritis or in malignant cases.

Conclusions: As RAGE expression has been acknowledged as a target therapy marker in diverse malignant tumors, it is recommended to study the most reliable RAGE expression indicator in gastric carcinoma to select promising cases responding to the disease treatment.

Biography:

Tarek Aboushousha has completed his MD in Pathology from Cairo University School of Medicine. He is the Ex-

Director of Pathology Department, Theodor Bilharz Research Institute, a governmental health-research organization. He has published more than 30 papers in reputed journals and has been serving as a Reviewer in international medical journals.