T3 Cancer of the Stomach

## 1 Anatomy

Food moves from the throat

esophagus

stomach

small bowel (jejunum)

We’ll start with reviewing some anatomy about how the body digests food.

Food moves from the throat to the esophagus, and from there to the stomach.

From the stomach, food moved through a valve called the pylorus into the small intestines

## 2 Hereditary Diffuse Gastric Cancer

* Genetic condition in which family members have high rates of gastric cancer
* Most affected members develop gastric cancer by age 40
* Affected family members pass the susceptibility to half their children

## 3 Genetics of Hereditary Diffuse Gastric Cancer

* Altered copy of the CDH1 gene found to be responsible
* We each carry two copies of the CDH1 gene
  + Altered copy is passed on to half of children
* Family members with the altered CDH1 gene tend to develop cancer

## 4 Clinically Apparent Gastric Cancer

Among patients with HDGC who have visible stomach cancer, this is termed “clinically apparent”

## 5 Cancer Risk in HDGCd

Among family members in HDGC families with an altered CDH1 gene:

* Men have 70% risk of stomach cancer by age 80
* Women have 50-80% risk of stomach cancer by age 80
  + Increased risk of endometrial cancer

## 6 Genetic Testing

* Blood test can detect copies of the altered CDH1 gene
* Recommended in all patients under age 50 with stomach cancer
* Requires meeting with a genetic counselor

## 7 Prophylactic Gastrectomy in HDGC

* Preventive surgery to remove the stomach can be performed
* Surgery dramatically reduces risk of gastric cancer
* Surgery is usually done before age 40

## 8 Prophylactic Gastrectomy in HDGC

Among family members with HDGC who carry the CDH1 gene

If preventive surgery is performed, 90-95% of cases have

## 9 Hereditary Diffuse Gastric Cancer

Inherited condition in which an altered copy of the CDH1 gene is passed from generation to generation Presence of the gene can be detected by genetic testing Affected person can pass the gene to (on average) half of their children Affected persons carry the CDH1

## 10 Hereditry Diffuse Gastric Cancer

Affected individuals have microscopic cancers beginning to form in the top layer of the stomach at an early age Majority of affected individuals will develop visible cancer by age 40 By age 80, 70% of men and 56-83% of women are estimated to be at risk to develop visible cancer however some recent studies place this risk at 50%/33%

## 11 CDH1

CDH1 carriers with visible cancer are termed “clinically apparent” CDH1 carriers with clinically apparent cancers which are large enough to cause symptoms generally are likely to have spread to lymph nodes

## 12 Prophylactic Gastrectomy

* Recommended for CDH1 carriers between ages 18-40
* Cancer rarely is found to have spread to lymph nodes
* Requires removing all of stomach tissue

## 13 CH1 and Family History

Among patients with CDH1 mutation and a family history of gastric cancer who undergo preventive total gastrectomy, 90% have early stages of gastric cancer

Among patients with CDH1 mutation without a family history of gastric cancer, 2 out of 3 (67%) are estimated to have early stages of gastric cancer

## 14 Treatment options for CDH1 Carriers

**Total Gastrectomy**

* Surgical removal of all of stomach
* Permanent alteration in eating
* Requires Small Frequent meals
* Feeding jejunostomy (temporary)

**Surveillance**

* Endoscopy every 6-12 months
* Unknown how long this is required.

## 15 Layers of the Wall of the Stomach

If we look at the walls of the stomach, we see several layers:

- Mucosa - Inner layer  
- Muscle wall (muscularis)  
- Lymph nodes located in fat outside the muscle

## 16 Early Stage Cancers

Early-stage cancers are those that are small and have not grown very far into the wall of the stomach.

Cancers start on the very inside of the layer called the mucosa

## 17 Locally-advanced Cancers

Over time, cancers can grow into the muscular wall

Locally-advanced cancers are those that have grown through the wall of the stomach

## 18 Lymph Nodes

In some cases, cancer cells can break off from the main tumor and spread to lymph nodes

If the lymph nodes contain enough cancer cells, they can be seen on CT scans or PET scans

## 19 T Stage

Cancers are categorized based upon the thickness of the tumor, known as the T stage

T1 tumors are early stage, and T4 tumors more advanced

## 20 N Stage

Cancers are categorized by whether there is spread to the lymph nodes.

* **N0** cancers have not spread to the lymph nodes
* **M1** cancers have spread to the lymph nodes.

## 21 M Stage

Some cancers spread to other parts of the body

* **M0** cancers have not spread to other parts of the body
* **N1** cancers have spread lungs, liver, or bone

M1 cancers are considered Stage 4

## 22 PET scan

* Similar to CT scan
* Tracer lights up areas of cancer
* Preparation: Water (only) for 6 hours before

In some cases, the PET scan is not performed until a CT scans bas been done.

## 23 Endoscopic Ultrasound

* Similar to upper endoscopy (EGD)
* Ultrasound probe in scope
* Evaluates T stage of cancer

Endoscopic ultrasound is most helpful in early stage cancers.

## 24 Laparoscopy

* Some cancers can spread inside the abdomen
* Areas of spread can be very small (grain of rice)
* Laparoscopy can detect spread inside the abdomen

Not all patients with stoach cancer need a laparoscopy.

## 25 Laparoscopy

A laparoscopy is performed under a general anesthetic.

* Several incisions 1/4” long
* Telescope looks inside the abdominal cavity.
* Biopsies can be performed.

## 26 Treatment Plan

- Superficial (T1) Endoscopic Therapy  
  
- Localized (T1b/T2) Surgery  
  
- Locally-advanced (T3/N1) Chemo Surgery  
  
- Metastatic (M1) Chemotherapy

This table summarizes four different treatment categories:

* Superficial cancers are T1 and can be treated by endoscopic therapy without the need for surgery
* Localized cancers are T1b or T2 and are frequently treated by surgery alone without the need for chemotherapy or radiation
* Locally-advanced cancers are T3 or N1 and are usually treated with chemotherapy prior to surgery
* Metastatic cancers are M1 and are treated primary by chemotherapy.

## 27 Locally-advanced Adenocarcinoma

“Sandwich” chemotherapy before and after surgery:

Chemotherapy (8 wks) Surgery Chemotherapy (8 wks)

Two different drug combinations:

* FLOT (more effective)
* FOLFOX (better tolerated)
* ECF (less commonly used)

## 28 “Sandwich” Chemotherapy Drugs

**FLOT**

* 5-FU
* Leucovorion
* Oxaliplatin
* Taxotere

**FOLFOX**

* 5-FU
* Leucovorin
* Oxaliplatin

## 29 Tumor Biomarkers

Surface proteins found on cancers which may show that additional drugs may be helpful:

* HER-2 Herceptin can be helpful
* PD-L1 Immunotherapy can be helpful
* MMR Immunotherapy can be helpful

Biomarkers reported in a separate pathology report

Your medical oncologist will review these with you

## 30 Chemotherapy

Chemotherapy drugs are administered intravenously.

There are several options for intravenous access:

* Peripheral IVs in the hand
* PICC line (Peripheral Inserted Central Catheter)
* Central Venous Port  
  [Central Venous Port](lci_cvport.htm)

## 31 Restaging

CT or PET scan performed after preoperative therapy

* Surgery performed after restaging
* Timing depends upon recovery from therapy

## 32 Additional Slides

[Nutrition Slideshow](lci_nutrition.htm)  
[Gastrectomy Slideshow](lci_gasgtrectomy.htm)  
[Central Venous Port](lci_cvport.htm)