

**TEXAS HOME OFFICE
UNDERWRITERS ASSOCIATION
SEPTEMBER 20, 2007**

**UNDERWRITING
THE
CARCINOID TUMOR**



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OPTIMUM RE INSURANCE**

1

Highlights

- Analyzing the literature review
 - Look at mortality impact
 - Rating implications
 - Conclusion
 - Questions ?
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2

What are they ?

- Carcinoid Tumors are Unusual, slow-growing type of tumors.
- They occur in any organ, but mostly in the digestive and the respiratory tract.
- They develop from cells in the neuroendocrine system and secrete serotonin.
- Carcinoid syndrome is when the concentration of serotonin is high enough to cause symptoms (3-5% of patients with tumors)

Carcinoid tumors – MayoClinic.com

Causes

- In the digestive system, Neuroendocrine cells, help to regulate the release of digestive juices; and in the lungs, these cells help control air and blood flow.
- No one knows what causes carcinoid tumors but, most researchers believe that
 - ➔ Carcinoid tumors develop when some of these cells undergo changes that cause them to grow too much.

Carcinoid tumors – MayoClinic.com

Symptoms

- Commonest symptoms are:
 - ➔ Flushing attacks: 25 % - 75 %
 - ➔ Diarrhea: 30 % - 80 %
- Are ill defined including : Wheezing, dyspnea, palpitations, fatigue, abdominal pain (often similar to Appendicitis), and cardiac involvement (tricuspid insufficiency)

Luigi Santacroce et al. Malignant carcinoid syndrome. emedicine.com

Diagnosis

- Measurement of 5 - Hydroxy Indole Acetic Acid in urine ➔ 5 - HIAA \geq 25 mg/d (N < 8 mg/d)
- Ultrasound, CT scanning and Angiography have a role to play in tumor localization.
- All other imaging studies are not conclusive (Scintigraphy, X-rays)
- Endoscopy of the lower and upper GI tract may be helpful.

Luigi Santacroce et al. Malignant carcinoid syndrome. emedicine.com

Localization

- Carcinoid Tumor can develop anywhere
- Sites by order of frequency are:

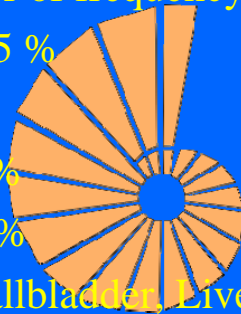
Appendix: 35 %

Ileum: 28 %

Rectum: 13 %

Bronchi: 13 %

Pancreas, Gallbladder, Liver, Larynx,
Testes and Ovaries in < 1 %



Luigi Santacroce et al. Malignant Carcinoid Syndrome. emedicine.com

Statistics

- Incidence: 1.9 per 100,000
- Women: mostly lung and stomach
- Men: mostly small intestine and rectum
- 13 % of the cases had metastases at diagnosis
- 24 % of carcinoid patients had more than one tumor
- Mean age of occurrence: 55 years



Crocetti et al. Eur J Cancer Prev. 2003 Jun;12(3):191-4

Statistics (Cont)

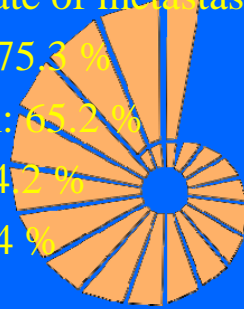
- Poor prognosis if metastases
- The highest rate of metastases :

Ileocecum: 75.3%

Jejunioileum: 65.2%

Pancreas: 64.7%

Larynx: 61.4%



Soga J. J Exp Clin Cancer Res. 2003 Dec;22(4):517-30

Aggressivity

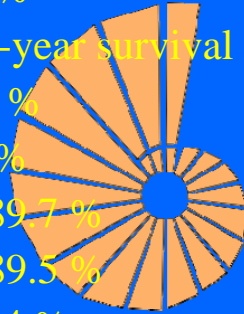
- Metastases are rare from Appendix
- Bone metastases are rare but more Aggressive
- Carcinoids of the Stomach or Rectum have bone metastases



Ali Nawaz Khan et al. Carcinoid, Gastrointestinal. emedicine.com

Outcome

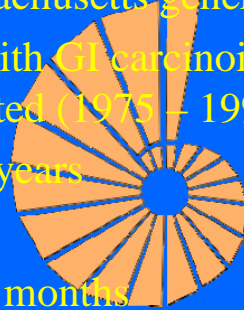
- Overall 5-year survival rates after curative resection: 82 %
- The highest 5-year survival rates by organ:
 - Ovary: 93.6 %
 - Liver: 92.6 %
 - Bronchial: 89.7 %
 - Appendix: 89.5 %
 - Rectum: 85.4 %



Soga J. J Exp Clin Cancer Res. 2003 Dec;22(4):517-30

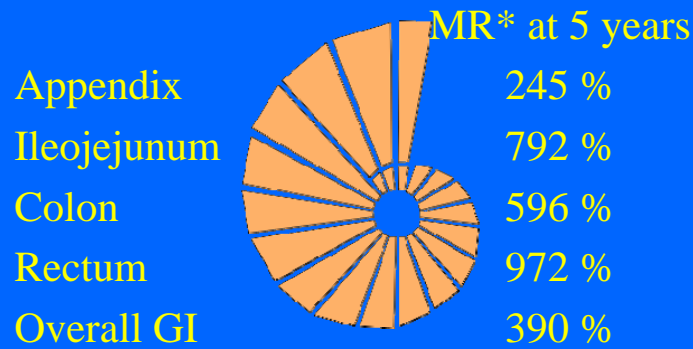
Mortality Ratio Gastrointestinal

- Study at Massachusetts general Hospital
- 150 patients with GI carcinoid tumors surgically treated (1975 - 1995)
- Mean age: 55 years
- 47 % men
- Follow-up: 66 months



Data from: Shebani et al. Ann Surg. 1999 Jun;229(6):815-21

Mortality Ratio Gastrointestinal



*LIFE TABLE USA 1989 - 1991

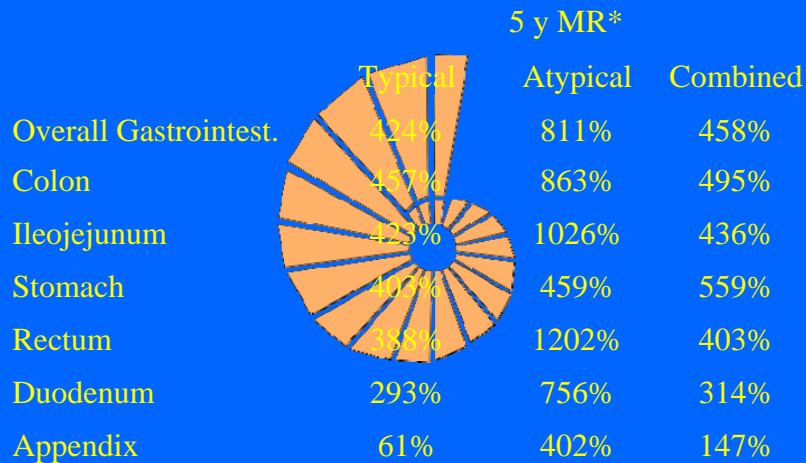
Data from: Shebani et al. Ann Surg. 1999 Jun;229(6):815-21

Mortality Ratio Gastrointestinal (2)

- Japanese study: 11 842 carcinoids patients
- 3168 patients with typical and atypical unknown gastric carcinoid tumors, surgically treated.
- Typical/Atypical = 2935/213 = 92%/8%
Well differentiated/Undifferentiated
- Cases from 64 countries
- Mean age: 53 years / 57 % men
- Follow-up: 5 years

Data from: Soga J. J Exp Clin Cancer Res. 2003 Dec;22(4):517-30

Mortality Ratio Gastrointestinal (2) cont.



*Life tables USA 1989-1991

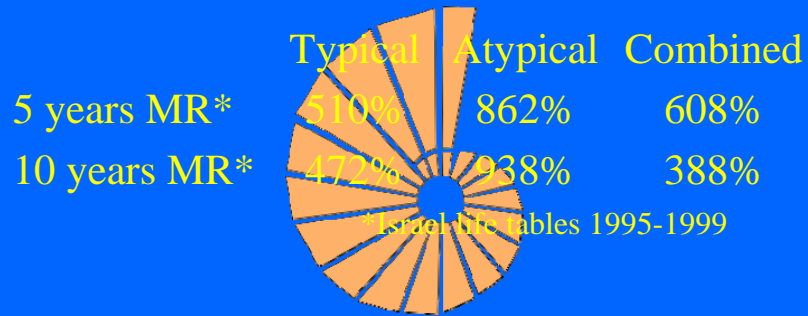
Data from: Soga J. J Exp Clin Cancer Res. 2003 Dec;22(4):517-30

Mortality Ratio Bronchial

- Study in Israel
 - 640 patients collected from large series in the literature. Treated surgically for bronchial carcinoid
 - Typical/Atypical = 813%/479%
 - Mean age: 52 years
 - 62 % women
 - Follow-up from 1980 – 1999
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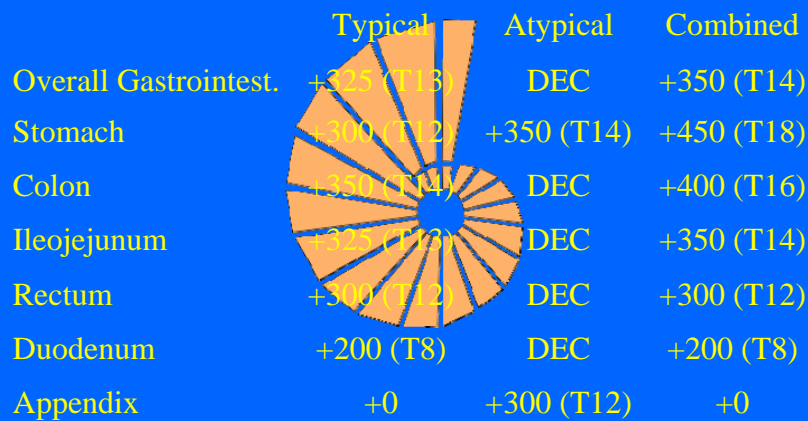
Data from: Gershon Fink et al. CHEST 2001;119:1647-1651

Mortality Ratio Bronchial cont.



Data from: Gershon Fink et al. CHEST 2001;119:1647-1651

Rating Suggestions Gastrointestinal



18

Rating Suggestions Bronchial

Typical Bronchial Carcinoid

First 2 years

3rd -5th year

6th year and up

Atypical Bronchial Carcinoid

PP

+250 (T10)

+100 (T4)

DEC



19

Is this rating appropriate in life?

	Current	Combined	Proposed Rating	
			Typical	Atypical
Overall GI	+250(T9)	+350 (T14)	+325 (T13)	DEC
Stomach	DEC	+350 (T14)	+300 (T12)	+350 (T14)
Appendix	+200 (T8)	+150 (T7)	+0	+300 (T12)
Bronchial	+0/RMD	+150 (T7)	PP: 2 y +250 (T10) +100 (T4)	DEC

20

Do we have 2 forms of Carcinoid ?

- Answer: NO

In 1907, carcinoid was the term given to these benign-appearing tumors.

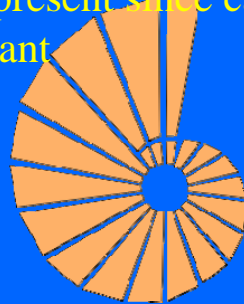
But by the 1950s, the fact that carcinoids were malignant was obvious.



21

Is this rating appropriate in CI?

- The distinction between benign and malignant should not be present since carcinoids are always malignant.



22



Thank You !

23

Questions?

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24