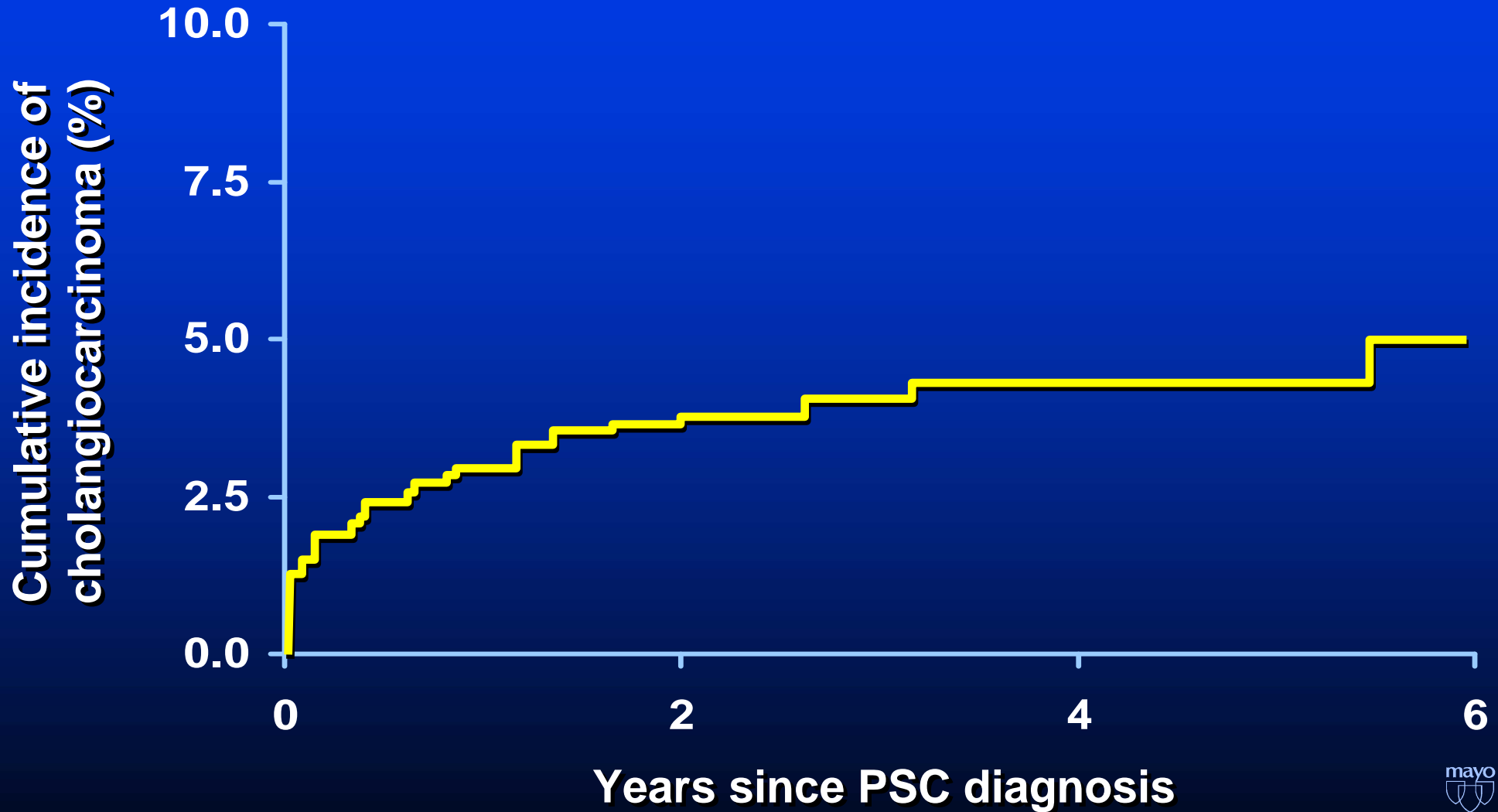




What is bile duct cancer?

**What is my chance of
getting bile duct cancer?**

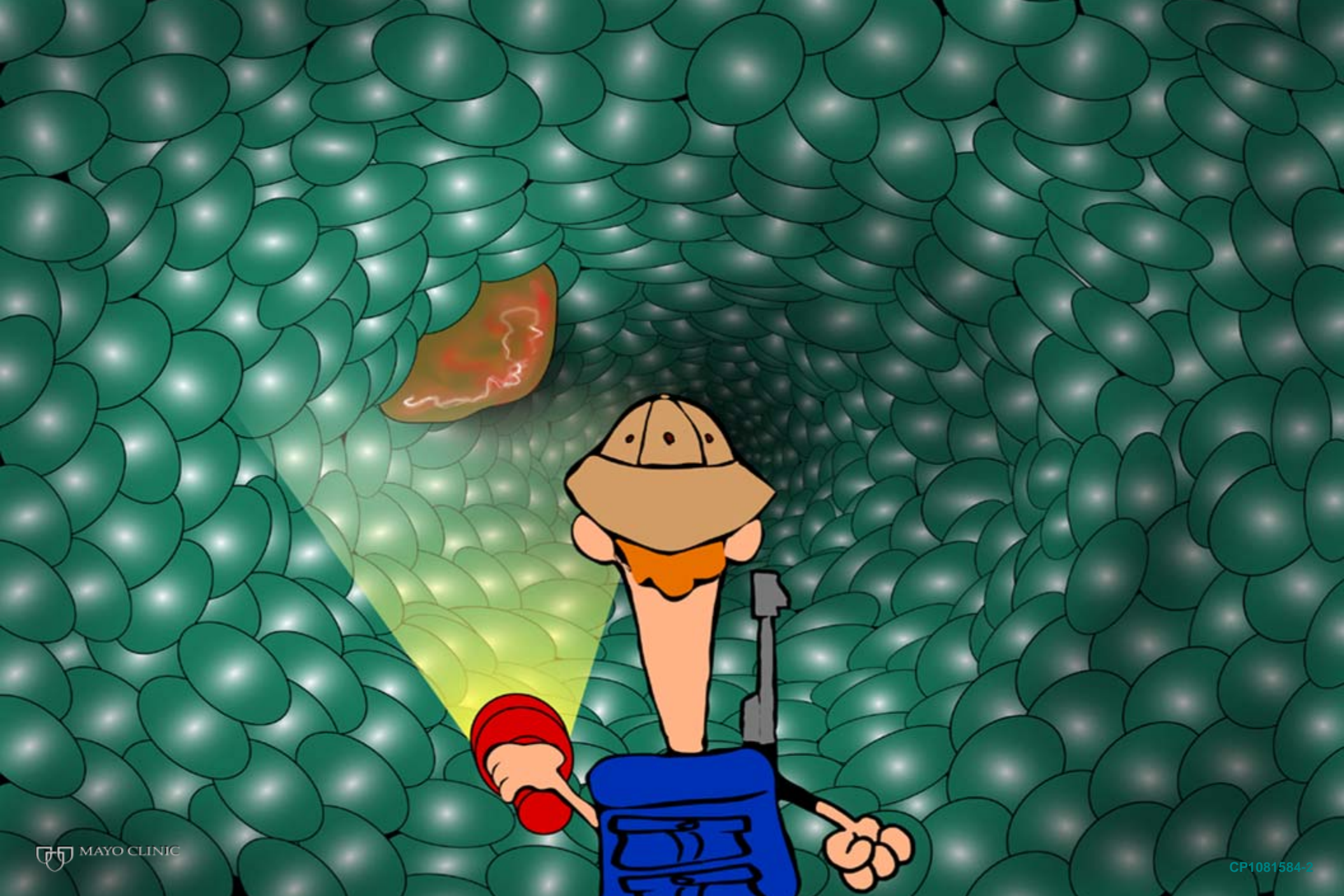
Incidence of Cholangiocarcinoma



My chances of getting bile duct cancer...

- Are only $\leq 1\%$ per year**
- Do not warrant pre-emptive liver transplantation**
- Do not increase markedly over time**
- Should not cause me sleepless nights**

How do you diagnose bile duct cancer?

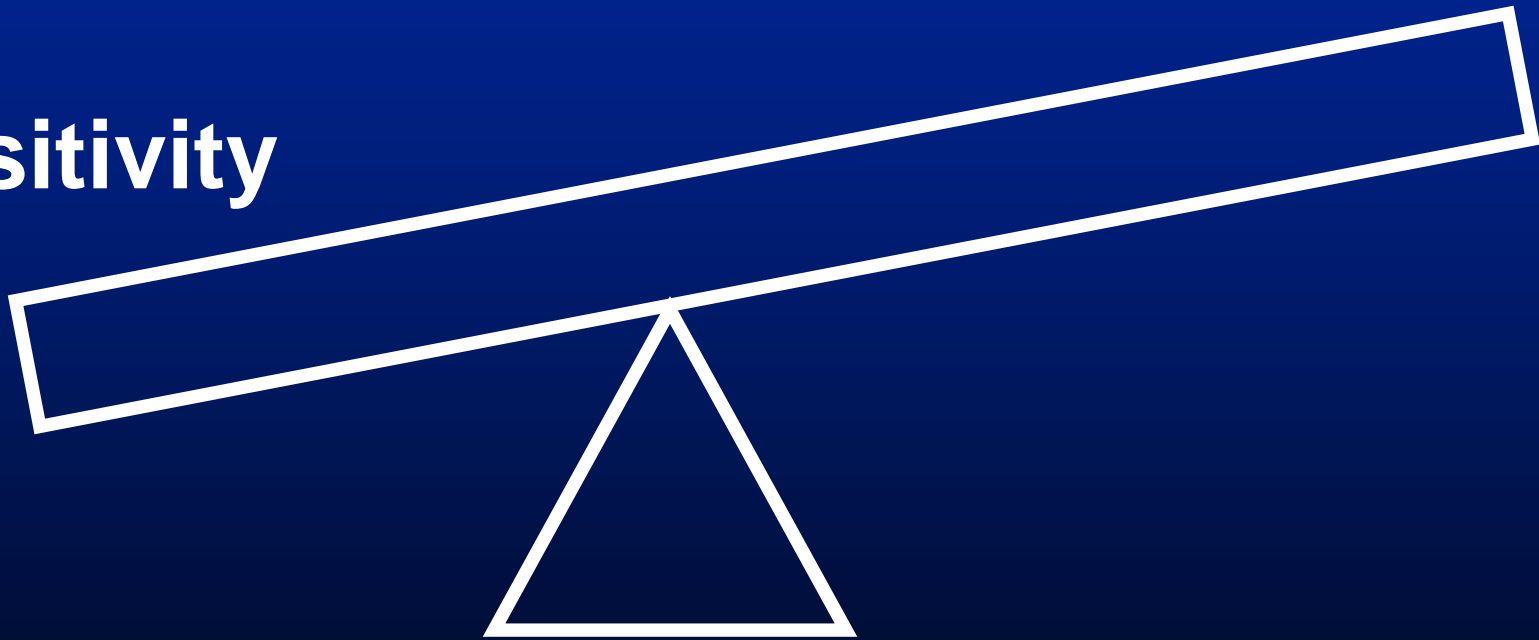


Definitions

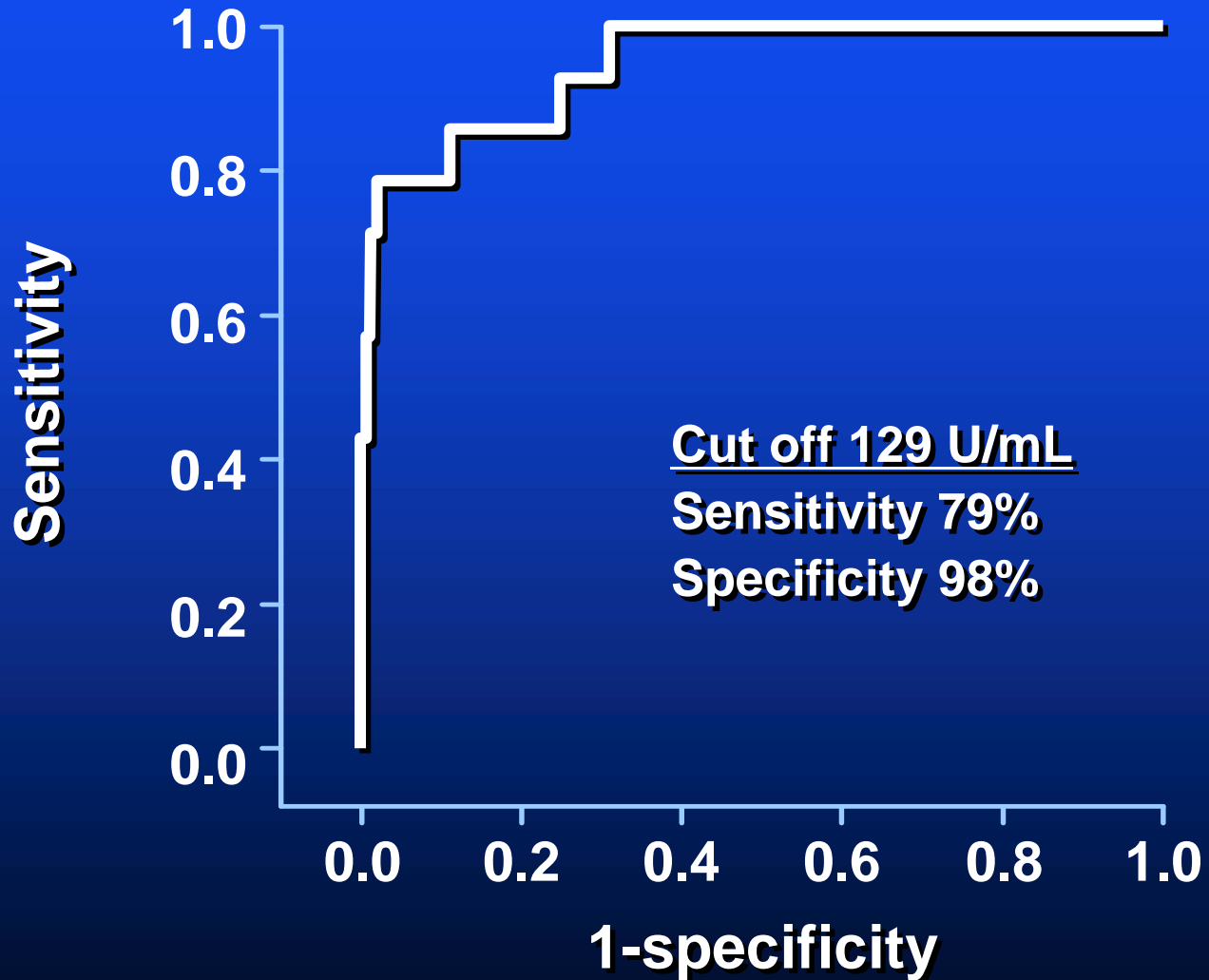
- **Sensitivity:** If I have cancer will the test detect it?
- **Specificity:** If the test is positive, do I have cancer?

sensitivity

specificity

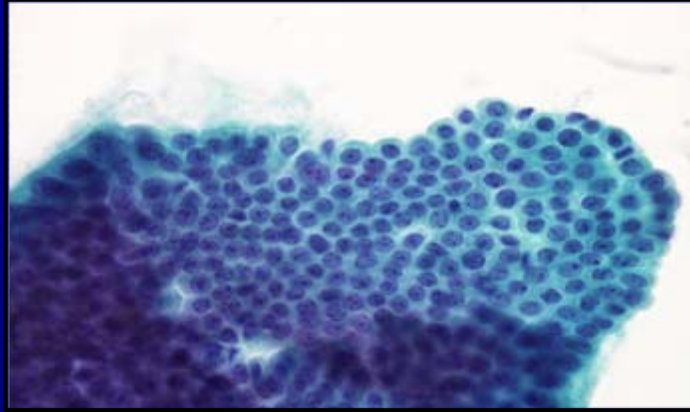


CA19-9 and CCA in PSC

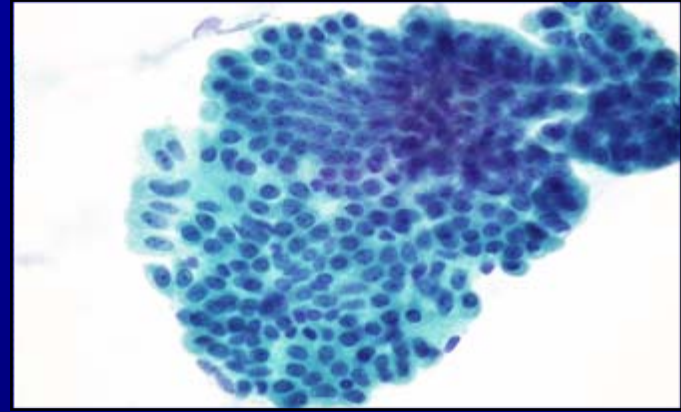


**Does ursodeoxycholic
acid reduce my chances
of getting bile duct
cancer?**

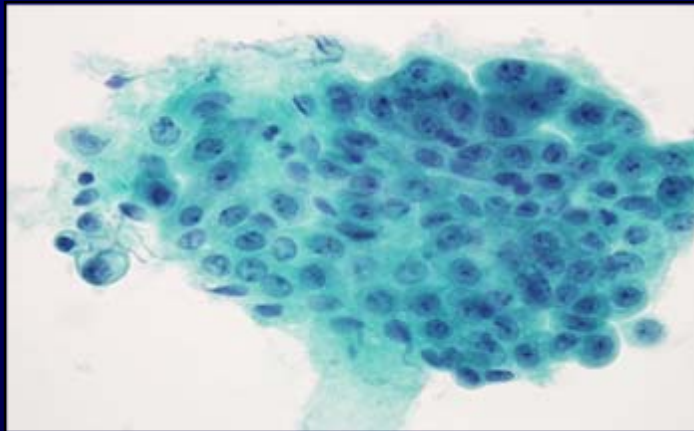
Routine Cytology



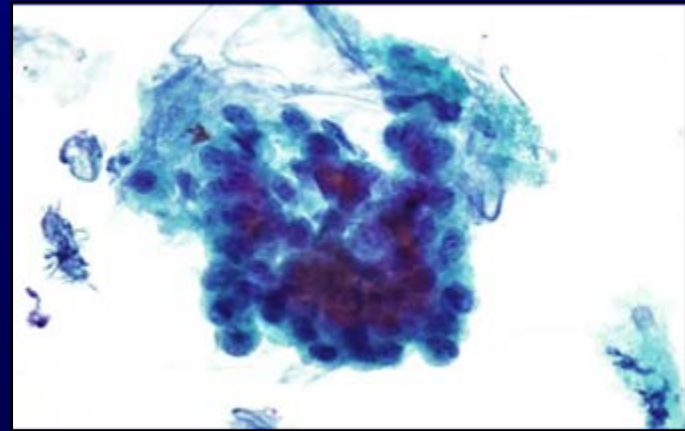
Normal



Atypical

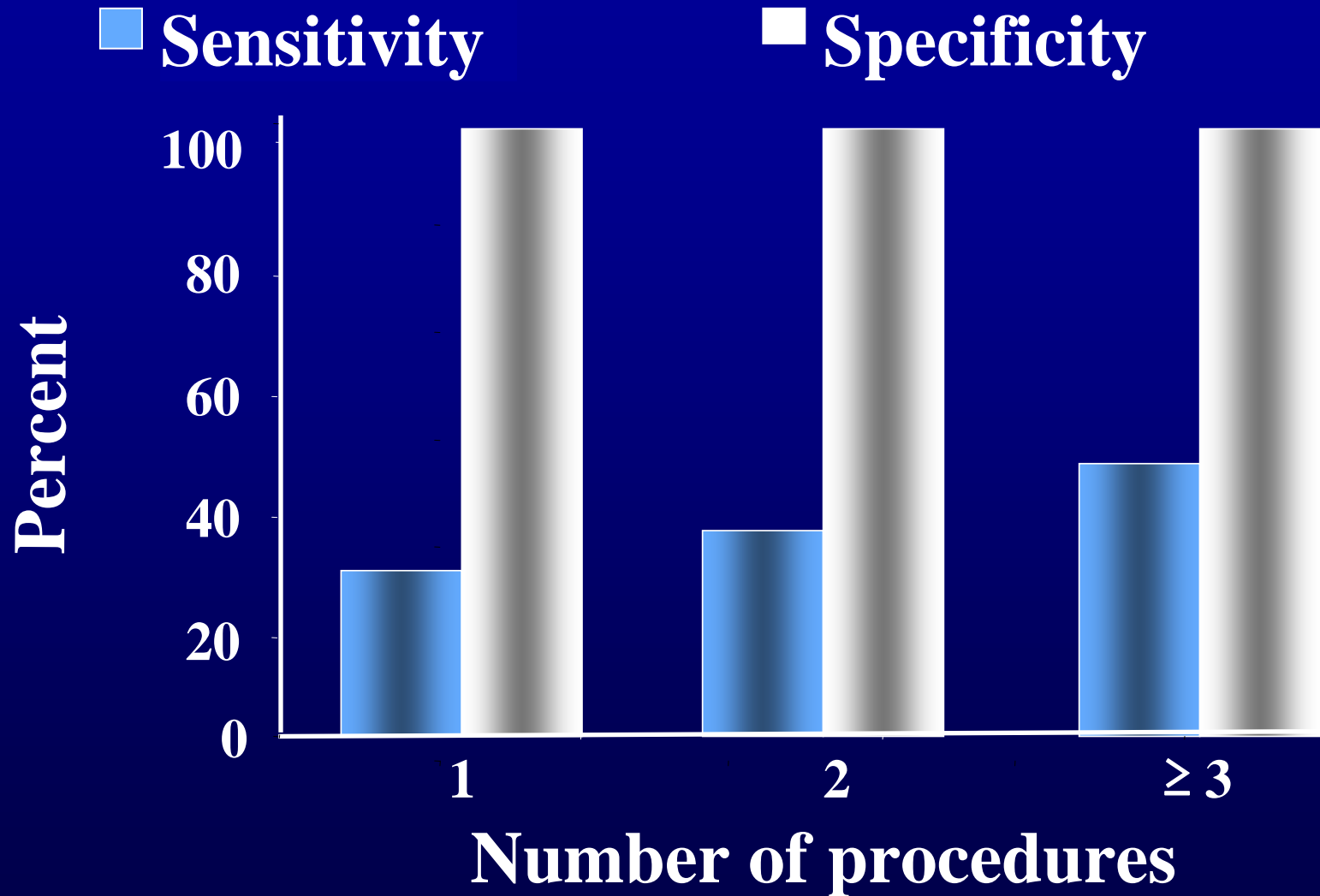


Suspicious



Positive

Routine Cytology in the Diagnosis of CCA in PSC



Advanced Cytologic Diagnostic Techniques

- **Fluorescent In situ Hybridization (FISH)**

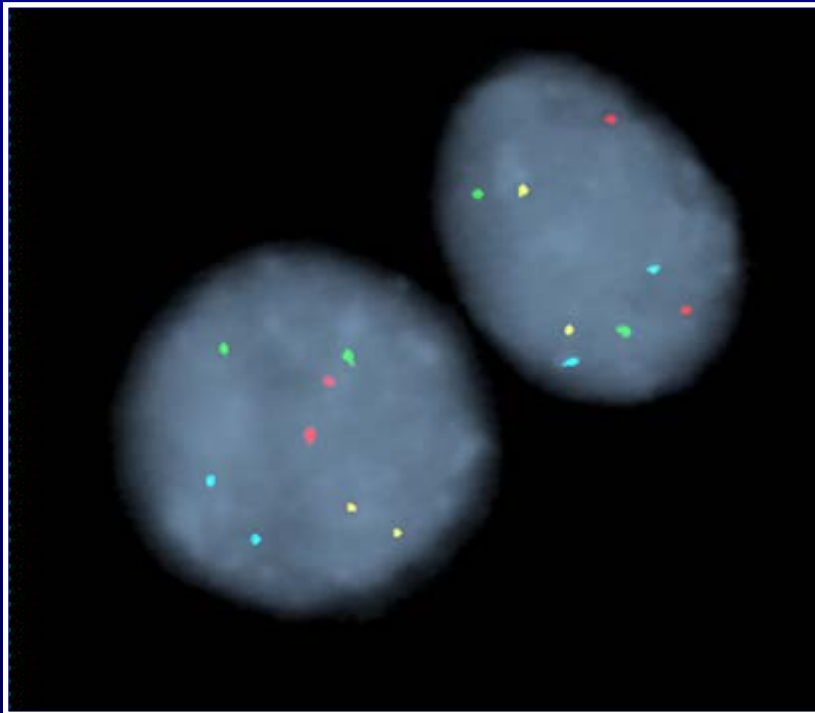
Fluorescent In Situ Hybridization (FISH)

- **Fluorescent hybridization oligonucleotides**
 - **chromosome 3**
 - **chromosome 17**
 - **chromosome 7**
 - **locus 9p21**

FISH

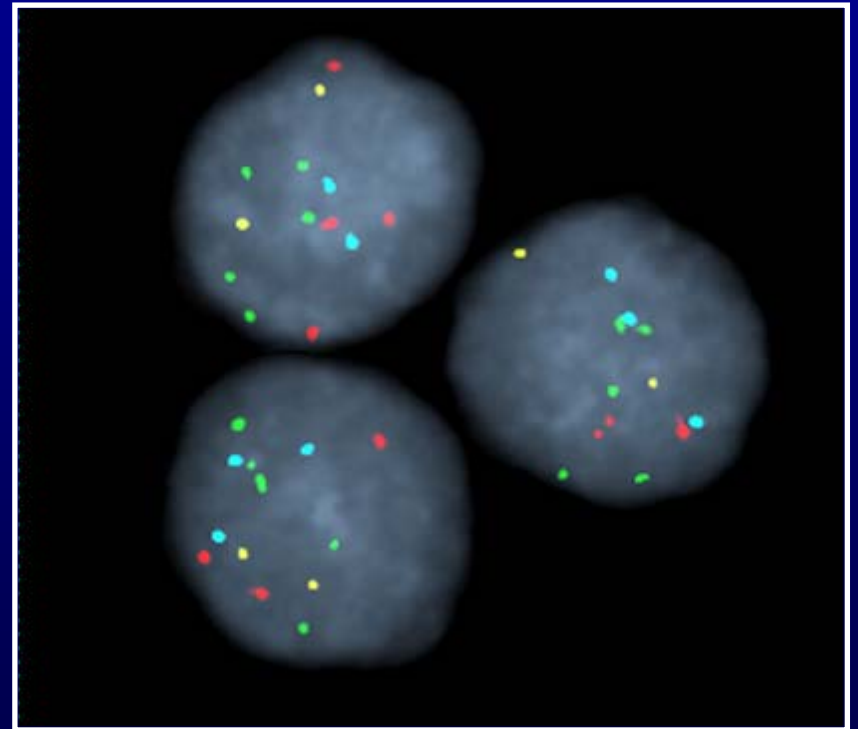
chrom 3= red, chrom 7= green, chrom 17= aqua,
locus 9p21= gold

Normal



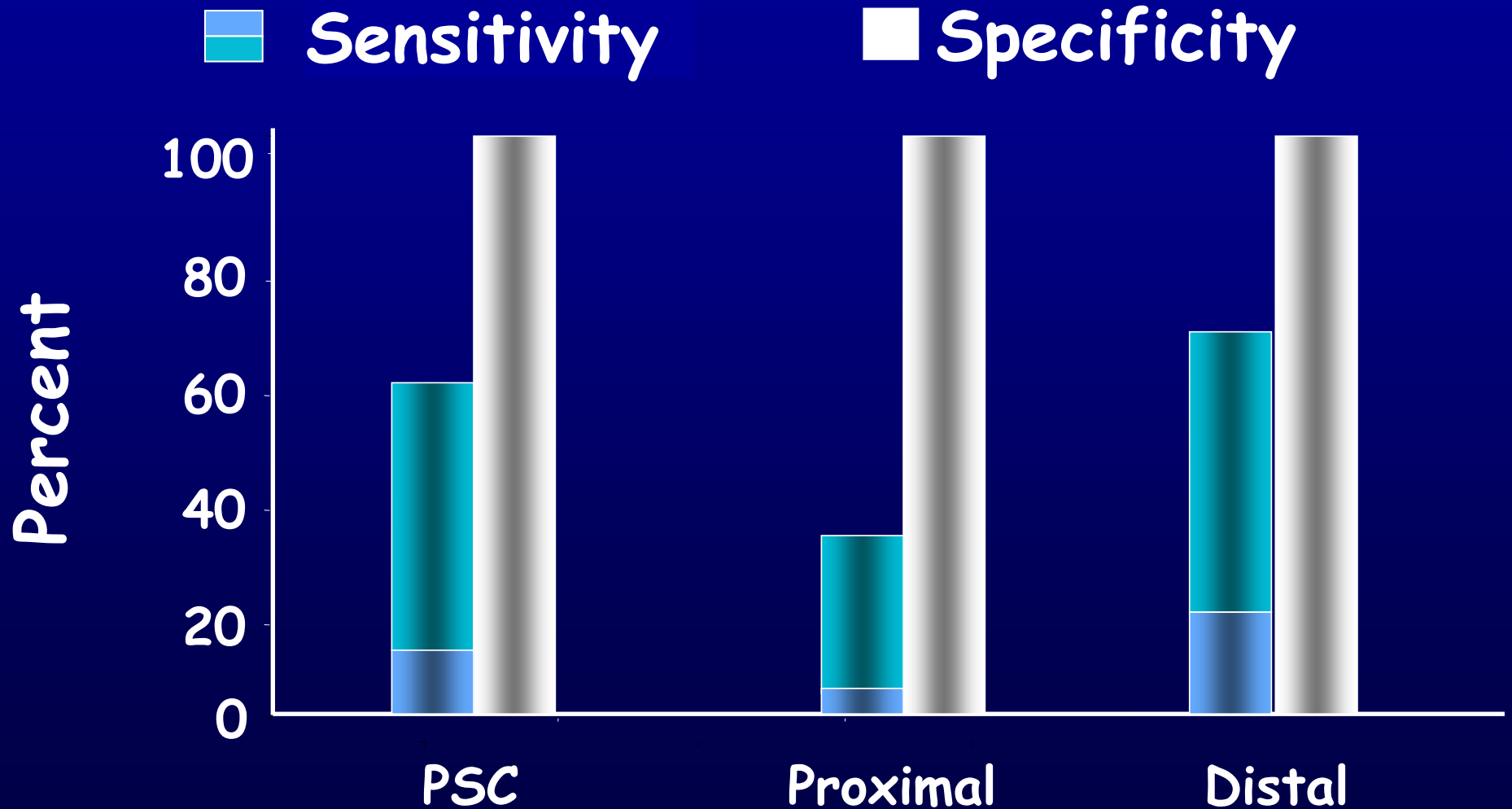
2 signals per color

Polysomy

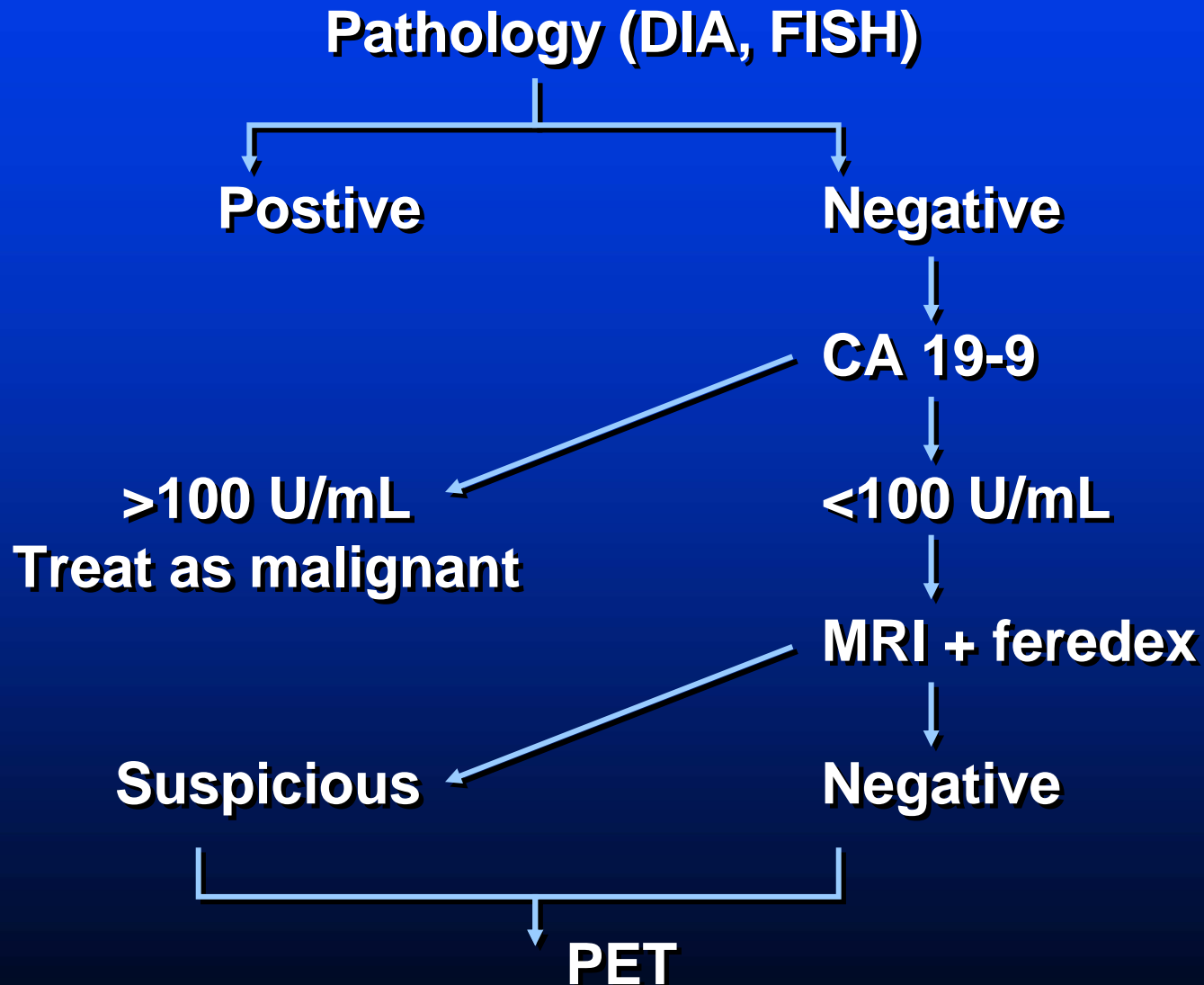


> 2 signals per color

CC positive plus FISH in PSC, Proximal and Distal Non PSC Strictures



Evaluation of Indeterminate Stricture



Ursodeoxycholic Acid (UDCA)

- ↓ Risk of colon cancer in ulcerative colitis, slightly
- ?? Effect on developing bile duct cancer
(Germans believe it might)

Staging of Cholangiocarcinoma

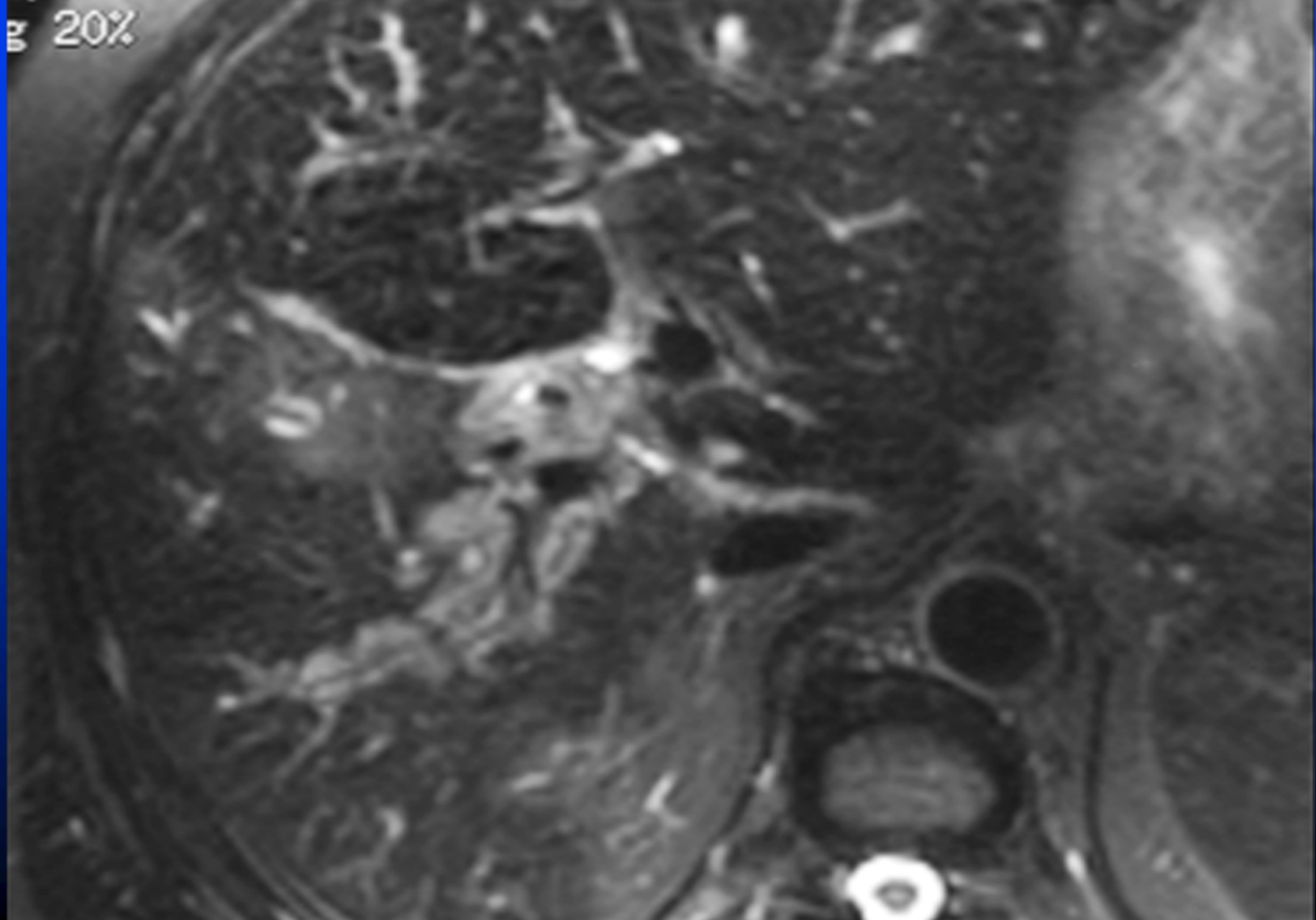
MR studies

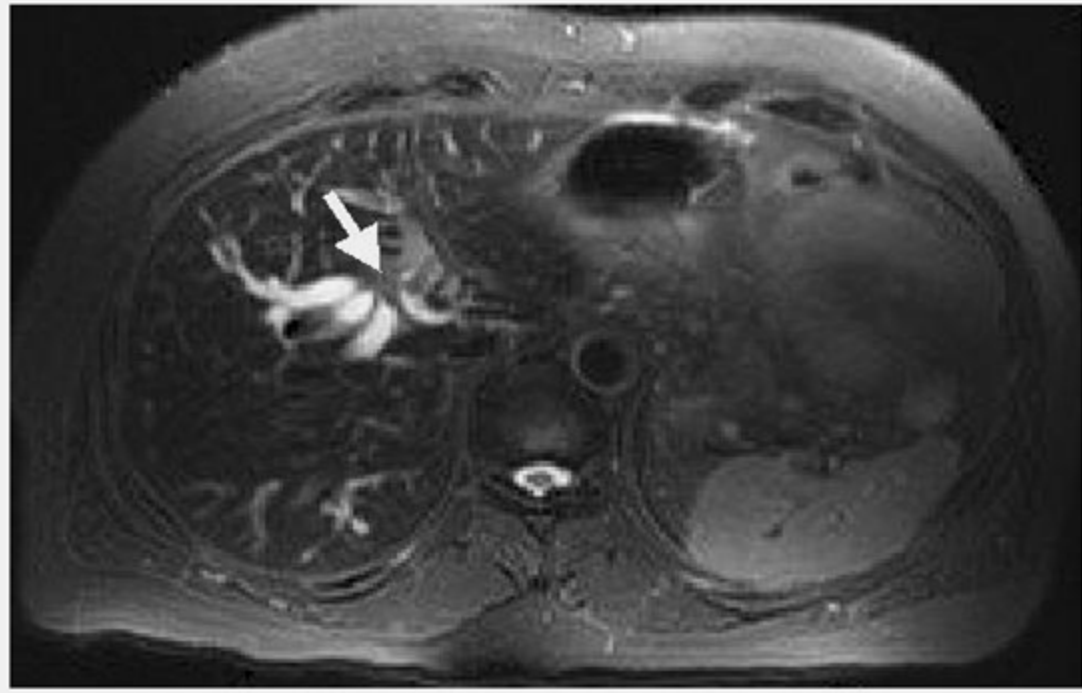
- Cholangiogram
- Feredex
- Angiogram

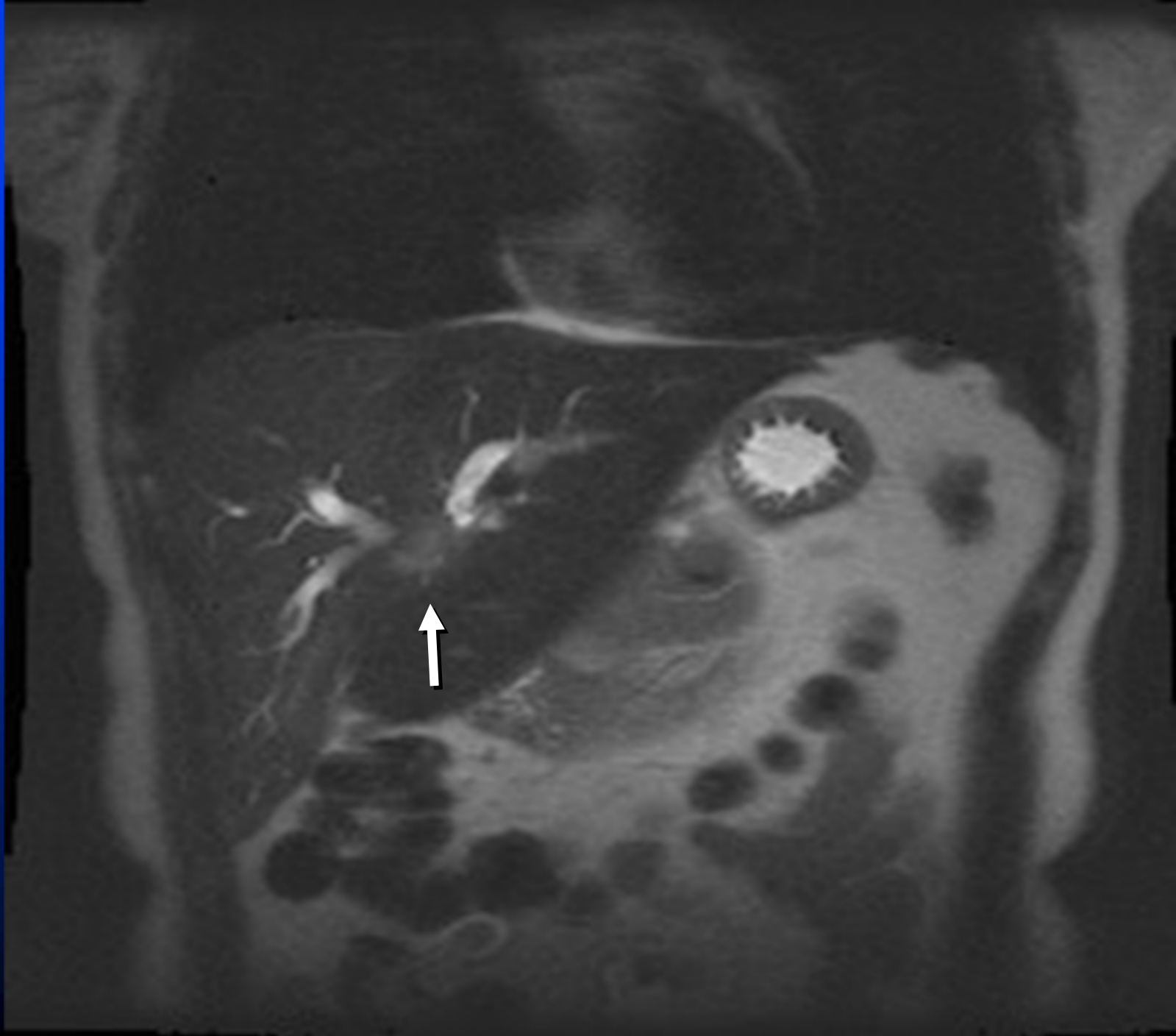
EUS

- FNA of lymph nodes

g 20%





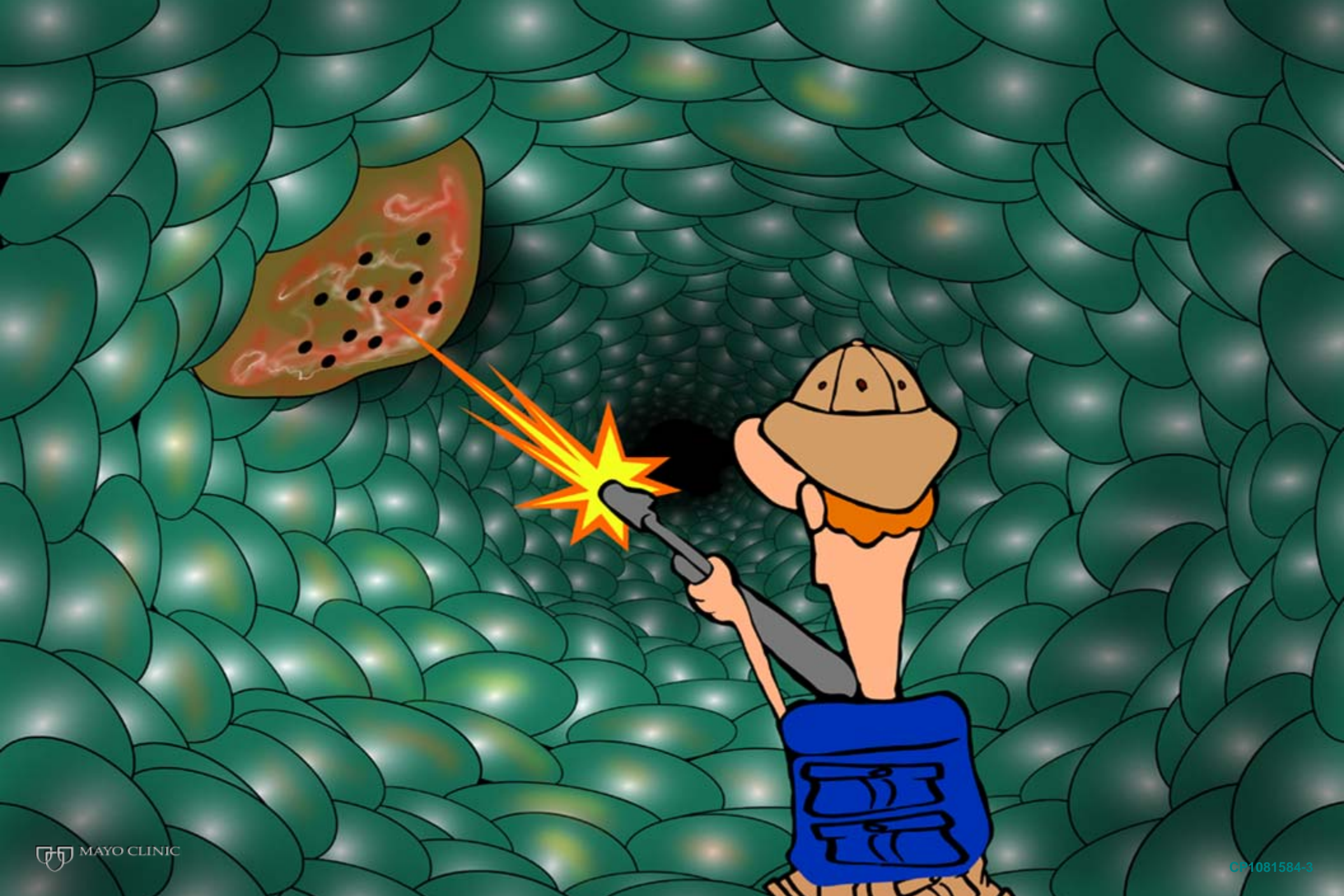


Cholangiocarcinoma

- Incidence
- Risk factors
- Diagnosis
- Staging
- Treatment

**If I get bile duct cancer,
what should I do?**

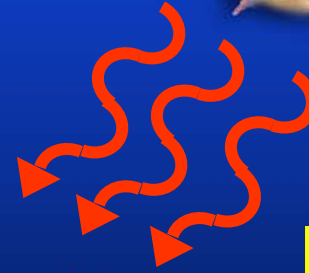
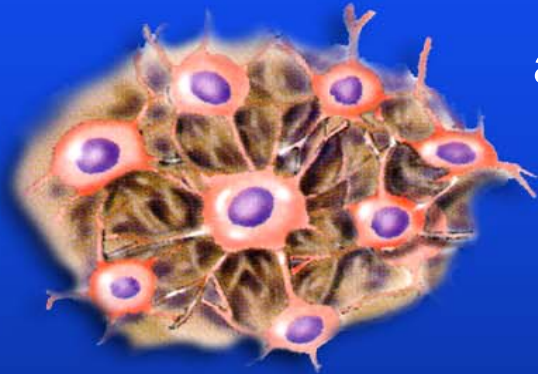
**What are the treatment
options?**



Photosensitizer



Photosensitizing drug administered 48 hours prior to treatment



Red light

Endoscopy is performed and red light is used to activate the photosensitizer



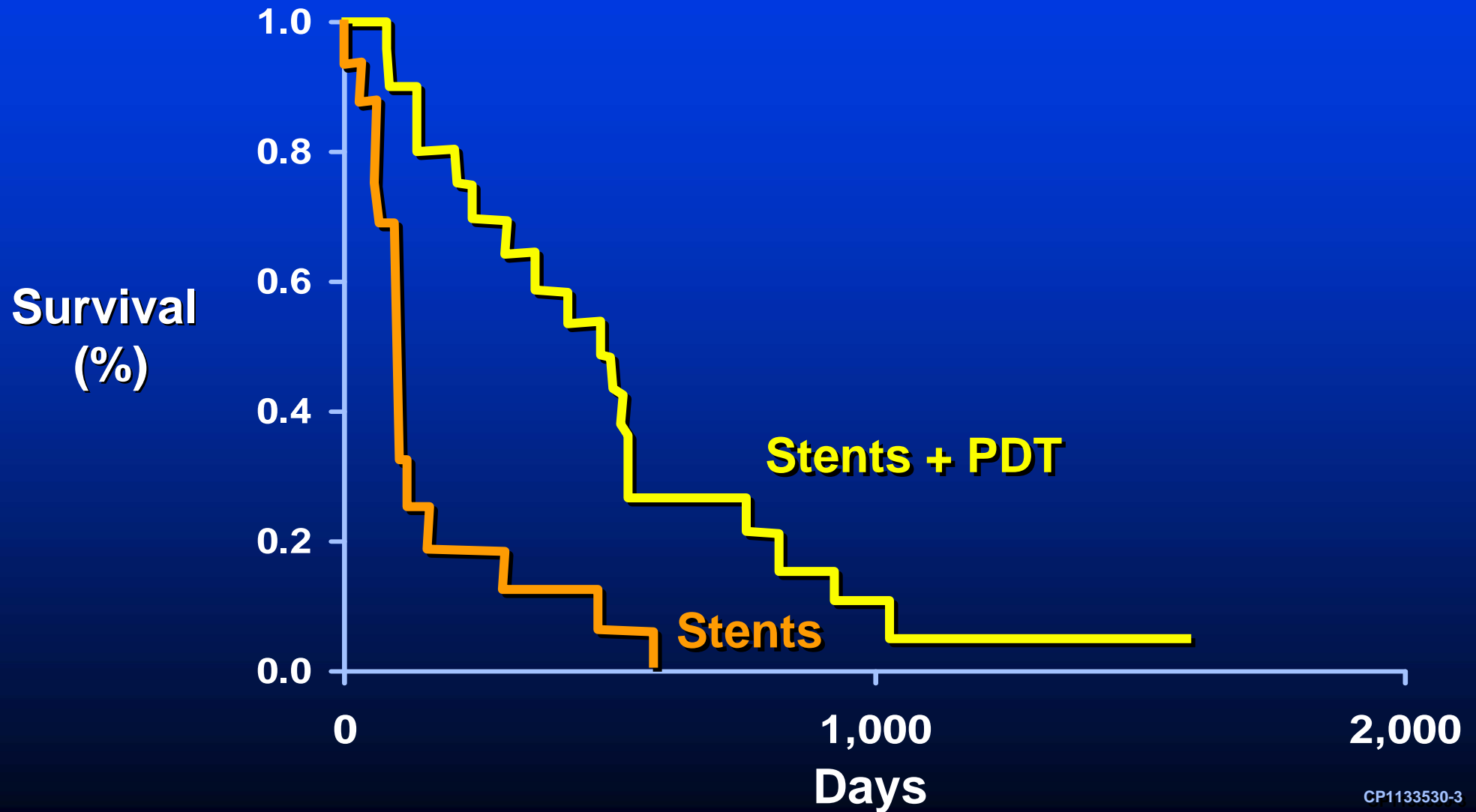
Dead cells



Oxygen

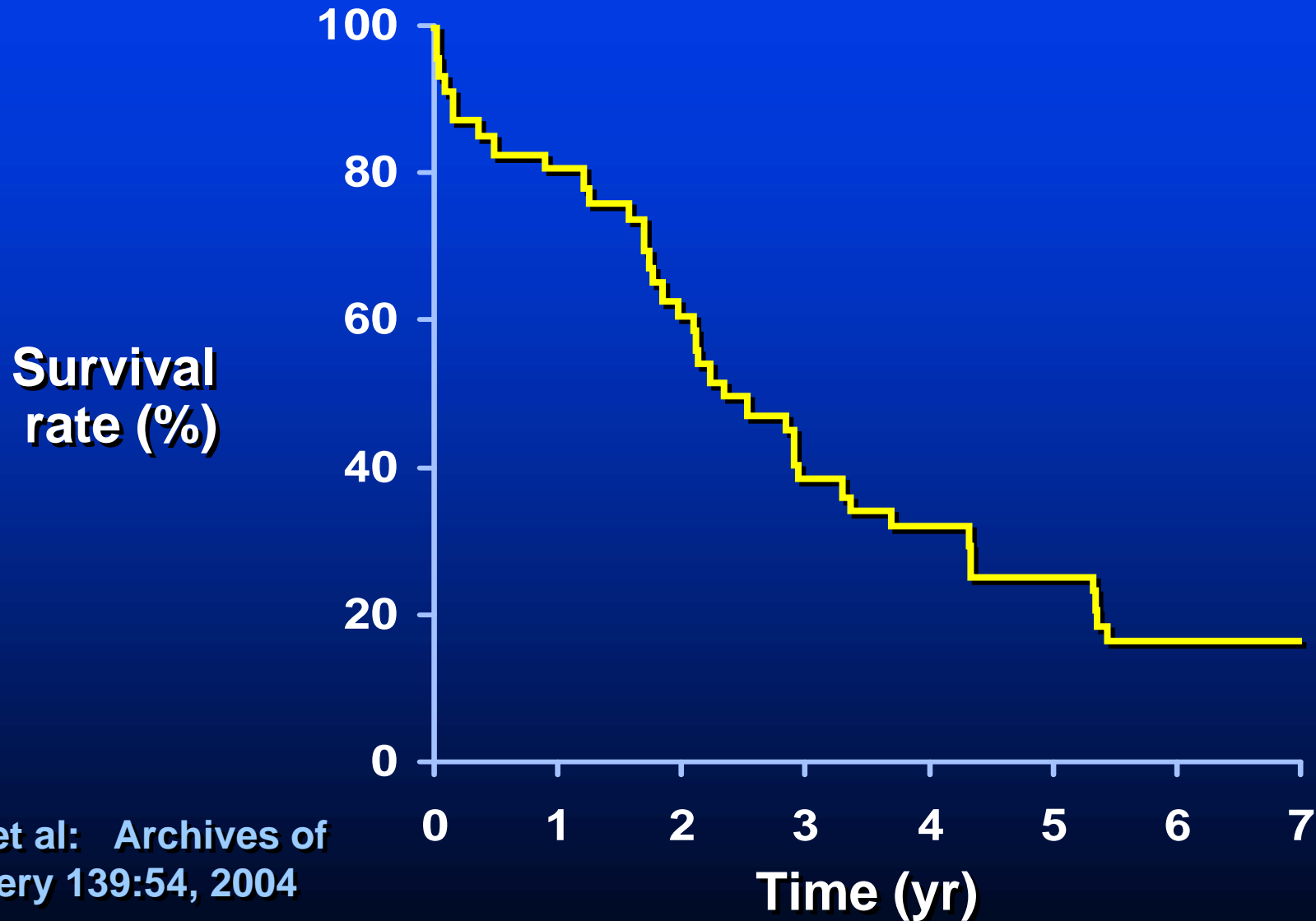


Kaplan-Meier Survival Curve



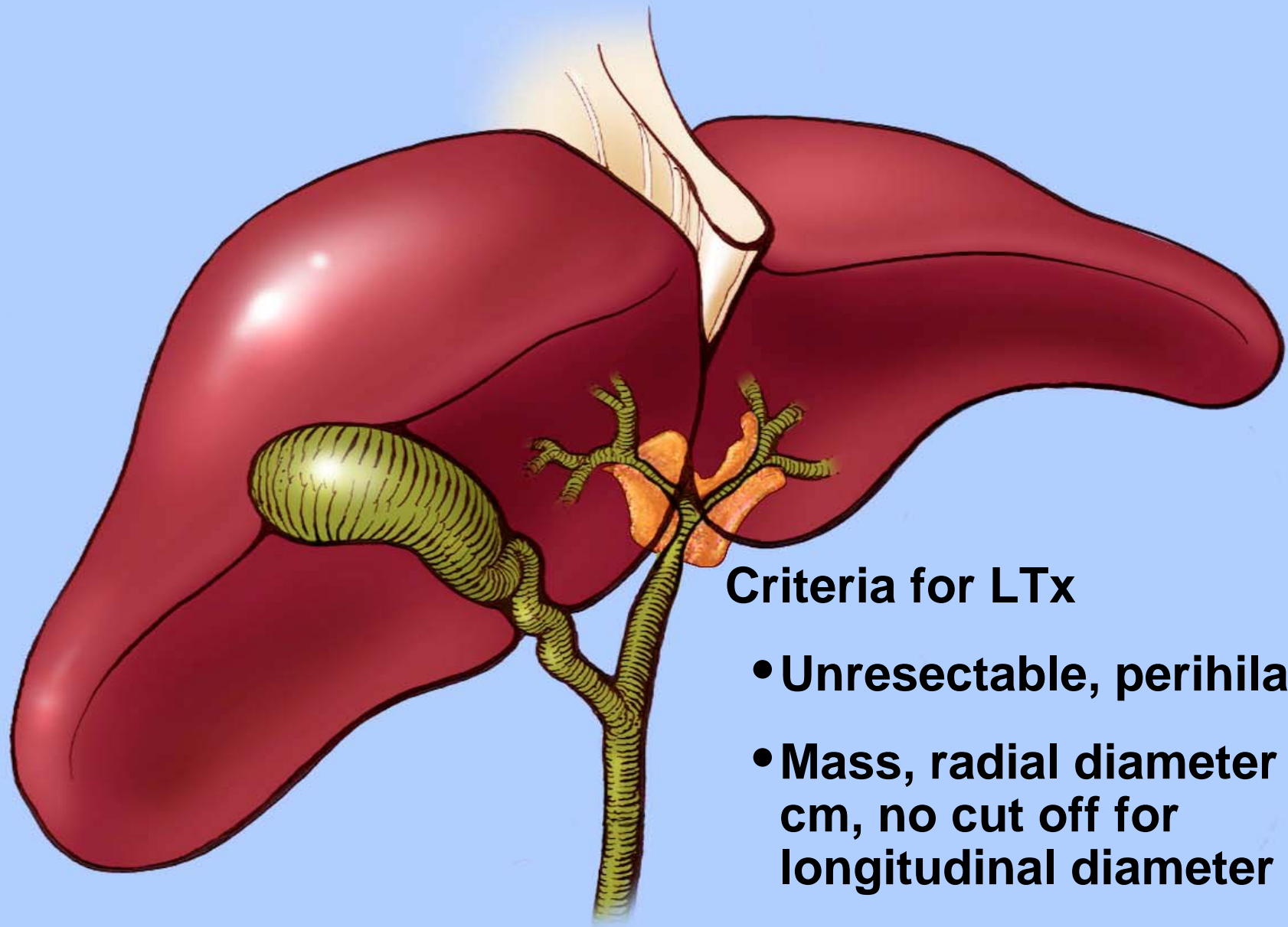
Surgery for Cholangiocarcinoma

Survival Following Resection for Perihilar Cholangiocarcinoma



Rea et al: Archives of Surgery 139:54, 2004

Liver Transplantation for Cholangiocarcinoma



Criteria for LTx

- Unresectable, perihilar
- Mass, radial diameter <3 cm, no cut off for longitudinal diameter
- If PSC, any ductal tumor <3 cm

Treatment Protocol

External beam radiation therapy



Brachytherapy



Staging Laparotomy



Capecitabine

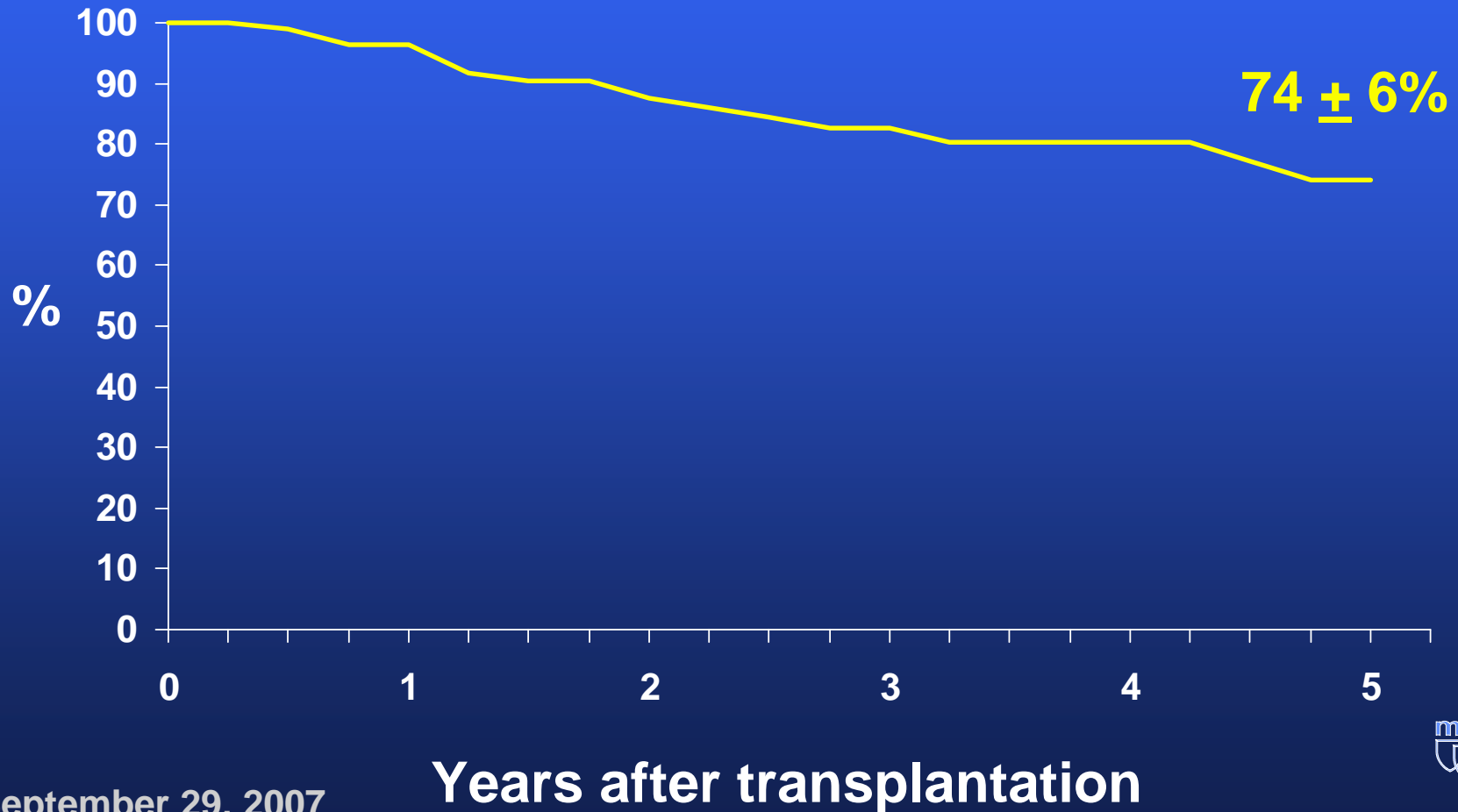


Liver transplantation

Patient Survival After Transplantation

1993 – 2007

n=90



September 29, 2007

Years after transplantation

Take Home Message...

- **Chances of developing bile duct cancer is ~10% over a lifetime**
- **Can be diagnosed by FISH from endoscopic brushings**
- **Can be treated by liver transplantation**

