Pancreatic Cancer

FPON Webinar
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Medical Oncologist, BC Cancer
Disclosure

• I have served in advisory boards to Merck and Eisai.
Pancreatic Cancer

• Epidemiology
• Diagnosis
• Treatment
• Follow up
Epidemiology and Diagnosis
4th Leading cause of cancer related death in USA
In 2022

• 6,900 Canadians will be diagnosed with pancreatic cancer.
• 5,700 Canadians will die from pancreatic cancer.
• 3,800 men will be diagnosed with pancreatic cancer and 3,000 will die from it.
• 3,100 women will be diagnosed with pancreatic cancer and 2,800 will die from it.
Pancreatic adenocarcinoma

Family History
Risk increases if multiple first-degree relatives had the disease, or any were diagnosed under 50.

Smoking
Smoking may cause about 20-30% of all exocrine pancreatic cancer cases.

Obesity
Obese people have a 20% increased risk of developing the disease compared to people of a normal weight.

Pancreatitis
Chronic pancreatitis increases risk. Risk is even higher for people with hereditary pancreatitis.

Diabetes
Long standing (over 5 years) diabetes increases risk.
## Risk Factors

### Main modifiable risk factors:
- Chronic pancreatitis
- Tobacco use
- Obesity
- Chronic diabetes
- Diet (low fibre)
- Alcohol abuse

### Main genetic risk factors:
- Lynch syndrome
- Breast and ovarian cancer syndrome
- Peutz Jeghers syndrome
- Familial adenomatous polyposis
- Hereditary pancreatitis
- Cystic fibrosis
- Ataxia telangiectasia
Polling Question:

• 50 years old gentleman presented with jaundice and ongoing mid-epigastric dull pain with decreased appetite and weight loss of 10 lb in last two month. US showed pancreatic head mass. CT guided biopsy was done. It was non-conclusive. ERCP was done but cytology and brushing only showed atypical cells. CA19-9 was normal. BC Cancer declined referral stating lack of tissue diagnosis. What is appropriate next step.

• 1- Refer to hepatobiliary surgeon for therapeutic considerations.
• 2-BC Cancer re-referral as it appears like a malignancy and should be handled by BC Cancer
• 3-CA19-9 and staging CT scan chest, abdomen and pelvis and re-referral to BC cancer if there is metastatic disease.
Sarcoma
Lymphoma

Adenocarcinoma (90%)

Neuroendocrine lesions

Rare lesions: Acinar cell carcinomas....

Completely different morphology, biology, treatment

Sarcoma
Lymphoma
Therapeutic considerations

• New and emerging targeted treatments require specific knowledge of driver mutations to customize systemic treatments.
  • BRCA1/BRCA2 - PARP inhibitors, platinum sensitivity
  • NTRK gene fusion – Larotrectinib, Entrectinib
  • MSI status – check point inhibitors
  • RET fusion-positive tumors — Selpercatinib
  • RAS G12C-mutated tumors — sotorasib
Polling Question

• What percentage of patients with pancreatic adenocarcinoma has localized resectable disease at the time of presentation.
  • 1-15%
  • 2-5%
  • 3-35%
Diagnosis

Metastatic disease 60%

Locally advanced disease 25%

Resectable disease 15%

Borderline

R0 surgery
Presentation

- Asthenia – 86 percent
- Weight loss – 85 percent
- Anorexia – 83 percent
- Abdominal pain – 79 percent
- Epigastric pain – 71 percent
- Dark urine – 59 percent
- Jaundice – 56 percent
- Nausea – 51 percent
- Back pain – 49 percent
- Diarrhea – 44 percent
- Vomiting – 33 percent
- Steatorrhea – 25 percent
- Thrombophlebitis – 3 percent

**Signs**

- Jaundice – 55 percent
- Hepatomegaly – 39 percent
- Right upper quadrant mass – 15 percent
- Cachexia – 13 percent
- Courvoisier's sign (nontender but palpable distended gallbladder at the right costal margin) – 13 percent
- Epigastric mass – 9 percent
- Ascites – 5 percent
Value of Tumor Marker Testing in Diagnosis

• CA19-9
  • sensitivity and specificity rates of CA 19-9 for pancreatic cancer range from 70 to 92, and 68 to 92 percent, respectively
  • Sensitivity closely related to tumor size
  • Lewis-negative phenotype (an estimated 5 to 10 percent of the population)
  • Bile duct obstructing jaundice
  • Various benign pancreaticobiliary disorders
Polling Question 2

• What percentage of patients survive for 5 years after successful complete surgical resection with node negative status.
  • 1- 70%
  • 2-30%
  • 3-50%
  • 4-10%
Treatment of Early Disease

Non Metastatic
## TNM Staging

<table>
<thead>
<tr>
<th>T1</th>
<th>Tumour 2 cm or less</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1a</td>
<td>Tumour 0.5 cm or less</td>
</tr>
<tr>
<td>T1b</td>
<td>Tumour greater than 0.5 cm but no more than 1 cm</td>
</tr>
<tr>
<td>T1c</td>
<td>Tumour greater than 1 cm but no more than 2 cm</td>
</tr>
</tbody>
</table>

| T2   | Tumour more than 2 cm but no more than 4 cm |

| T3   | Tumour more than 4 cm in greatest dimension |

| T4   | Tumour involves coeliac axis, superior mesenteric artery and/or common hepatic artery |

| N1   | Metastases in 1 to 3 nodes                 |
| N2   | Metastases in 4 or more nodes              |

<table>
<thead>
<tr>
<th>M category unchanged</th>
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<table>
<thead>
<tr>
<th>Stage</th>
<th>T1</th>
<th>N0</th>
<th>M0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage IA</td>
<td>T1</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IB</td>
<td>T2</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IIA</td>
<td>T3</td>
<td>N0</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IIB</td>
<td>T1, T2, T3</td>
<td>N1</td>
<td>M0</td>
</tr>
<tr>
<td>Stage III</td>
<td>T1, T2, T3</td>
<td>N2</td>
<td>M0</td>
</tr>
<tr>
<td>Stage IV</td>
<td>Any T</td>
<td>Any N</td>
<td>M1</td>
</tr>
</tbody>
</table>
Initial Assessment for therapeutic considerations

<table>
<thead>
<tr>
<th>Patient</th>
<th>● Age?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>● Comorbidities?</td>
</tr>
<tr>
<td></td>
<td>● PS?</td>
</tr>
<tr>
<td>Distant disease</td>
<td>● Metastases?</td>
</tr>
<tr>
<td></td>
<td>● Lymph nodes?</td>
</tr>
<tr>
<td>Local disease</td>
<td>● Contact with vessels?</td>
</tr>
<tr>
<td></td>
<td>● Portal hypertension?</td>
</tr>
</tbody>
</table>
Locally advanced borderline resectable

- mFOLFIRINOX
- Gemcitabine
Successful Surgical Resection

With surgery alone relapse rates are reported to be 85 to 95% within 5 years. Adjuvant therapy to kill residual tumour cells seems fundamental to improve patients outcome.

- **Studies: ESPAC-1**: 5FU > observation
- **CONKO-001**: Gemcitabine > obs
- **ESPAC-3**: Gemcitabine = 5FU
- **ESPAC-4**: Gem+Capecitabine > Gem

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**Graphs:**
- **OS (Overall Survival):** Chemotherapy vs. Observation
- **DFS (Disease-Free Survival):** Gemcitabine vs. Observation
- **OS (Overall Survival) - ESPAC-3:**
- **OS (Overall Survival) - ESPAC-4:**
FOLFIRINOX versus Gemcitabine for Metastatic Pancreatic Cancer

Increased Survival in Pancreatic Cancer with nab-Paclitaxel plus Gemcitabine

**Etude PRODIGE 24**
Phase III mFOLFIRINOX vs. Gem
NCT01526135

**Etude APACT**
Phase III Gem + nab-paclitaxel vs. Gem
NCT01964430


Adjuvant FOLFIRINOX

mFOLFIRINOX
/ 2 wk, 12 cycles

GEMCITABINE
1000 mg/m²
3 wk/4, 6 cycles

Primary objective: DFS
A. Disease-free Survival

- Stratified hazard ratio for cancer-related event, second cancer, or death: 0.58 (95% CI, 0.46–0.73)
- P=0.001
- No. of events, 314

mDFS: 21.6 vs. 12.8 months

B. Overall Survival

- Stratified hazard ratio for death: 0.64 (95% CI, 0.48–0.86)
- P=0.003
- No. of deaths, 192

mOS: 54.4 vs. 35.0 months
Gemcitabine+nab Paclitaxel in adjuvant setting
APACT study

Primary objective: DFS with central review
Primary objective

DFS
19.4 vs. 18.8 mo
HR: 0.88 (95% CI: 0.729, 1.063) p=0.1824

Phase III RCT
N=866 pts

Secondary objective

OS
40.5 vs. 36.2 mo
HR: 0.82 (95% CI: 0.680, 0.996) p=0.045
Summary

Non Metastatic Disease
Resectable Pancreatic Cancer and adjuvant treatment

Resectability

R0 resectable pancreatic cancer

Clinical trials Assessing neoadjuvant treatments

Surgery

Borderline resectable pancreatic cancer

Clinical trials or CT adapted to the patients condition (FOLFIRINOX, Gem+ Nab-paclitaxel or Gem)

Tumour response

Tumour progression

Adjuvant chemotherapy
Start: maximum 3 mo after surgery
Duration: 6 mo
Modified FOLFIRINOX in fit patients
Gem or Gem/Cap in the others

Switch chemotherapy
Discuss Radiotherapy
Advance Metastatic Pancreatic Cancer
Metastatic Pancreatic Cancer

**OS**

- **Before 1997:** 3-4 mo
- **1997** Gemcitabine: 5-6 mo
- **2005** Gemcitabine; option «doublet »
- **2010** FOLFIRINOX: 11-12 mo
- **2013** Gemcitabine + Abraxane: 9-10 mo
Frist Line Treatment for Metastatic Pancreatic Cancer

- Oxaliplatin 85 mg/m²
- LV 400 mg/m²
- Irinotecan 180 mg/m²,*
- 5 FU continue 2.4 g/m² 46 h

- Metastatic
- Chemotherapy naïve
- PS 0 or 1
- 18-75-year-old
- Bilirubinemia <1.5 xN

mFOLFIRINOX
/ 2 wk, 12 cycles

GEMCITABINE
1000 mg/m²
3 wk/ 4, 6 cycles

Primary objective: OS
Benefit

PFS

ORR = 31% vs. 9%; DCR = 70% vs. 51%

Hazard ratio, 0.47 (95% CI, 0.37–0.59)
P<0.001

OS

Hazard ratio, 0.57 (95% CI, 0.45–0.73)
P<0.001 by stratified log-rank test

No. at Risk
Gemcitabine 171 88 26 8 5 2 0 0 0 0 0 0 0 0 0
FOLFIRINOX 171 121 85 42 17 7 4 1 1 0 0 0 0 0 0

6.4 mo vs. 3.3 mo

No. at Risk
Gemcitabine 171 134 89 48 28 14 7 6 3 3 2 2 2 2 1
FOLFIRINOX 171 146 116 81 62 34 20 13 9 5 3 2 2 2 2
FOLFIRINOX was favoured in subgroups
It comes at cost of side effects

<table>
<thead>
<tr>
<th>Event</th>
<th>FOLFIRINOX (N=171)</th>
<th>Gemcitabine (N=171)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hematologic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutropenia</td>
<td>75/164 (45.7)</td>
<td>35/167 (21.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Febrile neutropenia</td>
<td>9/166 (5.4)</td>
<td>2/169 (1.2)</td>
<td>0.03</td>
</tr>
<tr>
<td>Thrombocytopenia</td>
<td>15/165 (9.1)</td>
<td>6/168 (3.6)</td>
<td>0.04</td>
</tr>
<tr>
<td>Anemia</td>
<td>13/166 (7.8)</td>
<td>10/168 (6.0)</td>
<td>NS</td>
</tr>
<tr>
<td>Nonhematologic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td>39/165 (23.6)</td>
<td>30/169 (17.8)</td>
<td>NS</td>
</tr>
<tr>
<td>Vomiting</td>
<td>24/166 (14.5)</td>
<td>14/169 (8.3)</td>
<td>NS</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>21/165 (12.7)</td>
<td>3/169 (1.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sensory neuropathy</td>
<td>15/166 (9.0)</td>
<td>0/169</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Elevated level of alanine aminotransferase</td>
<td>12/165 (7.3)</td>
<td>35/168 (20.8)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Thromboembolism</td>
<td>11/166 (6.6)</td>
<td>7/169 (4.1)</td>
<td>NS</td>
</tr>
</tbody>
</table>

* Events listed are those that occurred in more than 5% of patients in either group. NS denotes not significant.
First Line Treatment:

- Gemcitabine 1000 mg/m$^2$
- Nab-paclitaxel 125 mg/m$^2$
- Metastatic
- Chemotherapy naive
- KPS $\geq$ 70
- Measurable tumour
- Bilirubinemia normal

Stratification:
- PS
- Liver metastases
- Country

Gem+Nab-paclitaxel
3w/4, 6 cycles

n=842

Gemcitabine
1000 mg/m$^2$
7w/8 then 3 w/4, 6 cycles

Primary objective: OS
Gem + nab Paclitaxel

**PFS**

- ORR: 29% vs. 8%
- DCR: 48% vs. 33%

Graph showing survival curves with PFS:
- nab-P + Gem
- Gem

**OS**

- HR = 0.69
- 95% CI: 0.581, 0.821
- P = 0.000024

- HR = 0.72
- 95% CI: 0.617; 0.835
- P = 0.000015

At risk:
- nab-P + Gem: 431, 291, 172, 92, 42, 10, 4, 2, 0
- Gem: 430, 290, 192, 93, 44, 10, 4, 0

5.5 mo vs. 3.7 mo

8.5 mo vs. 6.7 mo
## Table 3. Common Adverse Events of Grade 3 or Higher and Growth-Factor Use.\(^a\)

<table>
<thead>
<tr>
<th>Event</th>
<th>nab-Paclitaxel plus Gemcitabine (N = 421)</th>
<th>Gemcitabine Alone (N = 402)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adverse event leading to death — no. (%)</td>
<td>18 (4)</td>
<td>18 (4)</td>
</tr>
<tr>
<td>Grade ≥3 hematologic adverse event — no./total no. (%)(^\dagger)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutropenia</td>
<td>153/405 (38)</td>
<td>103/388 (27)</td>
</tr>
<tr>
<td>Leukopenia</td>
<td>124/405 (31)</td>
<td>63/388 (16)</td>
</tr>
<tr>
<td>Thrombocytopenia</td>
<td>52/405 (13)</td>
<td>36/388 (9)</td>
</tr>
<tr>
<td>Anemia</td>
<td>53/405 (13)</td>
<td>48/388 (12)</td>
</tr>
<tr>
<td>Receipt of growth factors — no./total no. (%)</td>
<td>110/431 (26)</td>
<td>63/431 (15)</td>
</tr>
<tr>
<td>Febrile neutropenia— no. (%)(^\dagger)</td>
<td>14 (3)</td>
<td>6 (1)</td>
</tr>
<tr>
<td>Grade ≥3 nonhematologic adverse event occurring in &gt;5% of patients — no. (%)(^\dagger)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatigue</td>
<td>70 (17)</td>
<td>27 (7)</td>
</tr>
<tr>
<td>Peripheral neuropathy(^\dagger)</td>
<td>70 (17)</td>
<td>3 (1)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>24 (6)</td>
<td>3 (1)</td>
</tr>
<tr>
<td>Grade ≥3 peripheral neuropathy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median time to onset — days</td>
<td>140</td>
<td>113</td>
</tr>
<tr>
<td>Median time to improvement by one grade — days</td>
<td>21</td>
<td>29</td>
</tr>
<tr>
<td>Median time to improvement to grade ≤1 — days</td>
<td>29</td>
<td>NR</td>
</tr>
<tr>
<td>Use of nab-paclitaxel resumed — no./total no. (%)</td>
<td>31/70 (44)</td>
<td>NA</td>
</tr>
</tbody>
</table>

\(^a\) NA denotes not applicable, and NR not reached.

\(^\dagger\) Assessment of the event was made on the basis of investigator assessment of treatment-related adverse events.

\(^\dagger\) Peripheral neuropathy was reported on the basis of groupings of preferred terms defined by standardized queries in the Medical Dictionary for Regulatory Activities.
Which regimen to choose as first line treatment?

<table>
<thead>
<tr>
<th></th>
<th>Efficacy¹</th>
<th>Safety²</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>FOLFIRINOX</td>
<td>Gem+ Nab-pacli</td>
</tr>
<tr>
<td>Performance status</td>
<td>PS2 &lt;1%</td>
<td>KPS 70-80: 40%</td>
</tr>
<tr>
<td>ORR</td>
<td>31.6%</td>
<td>29%</td>
</tr>
<tr>
<td>PFS</td>
<td>6.4 mo</td>
<td>5.5 mo</td>
</tr>
<tr>
<td>with gem</td>
<td>3.3 mo</td>
<td>3.7 mo</td>
</tr>
<tr>
<td>2nd Line</td>
<td>47%</td>
<td>38%</td>
</tr>
<tr>
<td>OS</td>
<td>11.1 mo</td>
<td>8.5 mo</td>
</tr>
<tr>
<td>with gem</td>
<td>6.8 mo</td>
<td>6.7 mo</td>
</tr>
</tbody>
</table>
Germ Line BRCA-2 mutated pancreatic cancer

POLO Study

- Pancreatic adenocarcinoma
- Germline Mutated BRCA 1/2
- Treated with a first line platinum
- Without disease progression within 16 weeks

Primary objective: Progression free survival

Olaparib 300 mg x 2 /d

Placebo

R
N=145
3:2
Effectiveness

### Progression-Free Survival (PFS)

<table>
<thead>
<tr>
<th>Months</th>
<th>Olaparib Group</th>
<th>Placebo Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>53.0%</td>
<td>23.0%</td>
</tr>
<tr>
<td>12</td>
<td>33.7%</td>
<td>14.3%</td>
</tr>
<tr>
<td>18</td>
<td>27.6%</td>
<td>9.6%</td>
</tr>
<tr>
<td>24</td>
<td>22.1%</td>
<td>9.6%</td>
</tr>
</tbody>
</table>

7.4 vs. 3.8 mo  
HR = 0.53  
(95% CI: 0.35, 0.82; p=0.004)

### Overall Survival (OS)

18.9 vs. 18.1 mo  
HR = 0.91  
(95% CI: 0.56, 1.46; p=0.68)
BRCA mutated Pancreatic cancer

<table>
<thead>
<tr>
<th>Group</th>
<th>Hazard ratio (95% CI)</th>
<th>HR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All patients</td>
<td></td>
<td>0.53 (0.35, 0.82)</td>
</tr>
<tr>
<td>1st-line FOLFIRINOX variants</td>
<td></td>
<td>0.54 (0.35, 0.84)</td>
</tr>
<tr>
<td>Other 1st-line PBC</td>
<td></td>
<td>0.76 (0.27, 2.32)</td>
</tr>
<tr>
<td>Doublet 1st-line PBC</td>
<td></td>
<td>0.59 (0.24, 1.50)</td>
</tr>
<tr>
<td>Triplet 1st-line PBC</td>
<td></td>
<td>0.51 (0.32, 0.82)</td>
</tr>
<tr>
<td>16 weeks to 6 months of 1st-line PBC</td>
<td></td>
<td>0.69 (0.43, 1.12)</td>
</tr>
<tr>
<td>&gt;6 months of 1st-line PBC</td>
<td></td>
<td>0.35 (0.17, 0.72)</td>
</tr>
<tr>
<td>Partial or complete response to 1st-line PBC</td>
<td></td>
<td>0.62 (0.35, 1.12)</td>
</tr>
<tr>
<td>Stable disease following 1st-line PBC</td>
<td></td>
<td>0.50 (0.29, 0.87)</td>
</tr>
<tr>
<td>Measurable disease at baseline</td>
<td></td>
<td>0.57 (0.37, 0.88)</td>
</tr>
<tr>
<td>Non-measurable or no evidence of disease</td>
<td></td>
<td>0.45 (0.14, 1.57)</td>
</tr>
<tr>
<td>Germline BRCA1 mutation</td>
<td></td>
<td>0.40 (0.20, 0.85)</td>
</tr>
<tr>
<td>Germline BRCA2 mutation</td>
<td></td>
<td>0.63 (0.39, 1.02)</td>
</tr>
<tr>
<td>Age &lt;65 years</td>
<td></td>
<td>0.45 (0.28, 0.72)</td>
</tr>
<tr>
<td>Age ≥65 years</td>
<td></td>
<td>1.02 (0.45, 2.60)</td>
</tr>
<tr>
<td>Male</td>
<td></td>
<td>0.46 (0.37, 0.80)</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>0.66 (0.35, 1.19)</td>
</tr>
<tr>
<td>Caucasian</td>
<td></td>
<td>0.59 (0.39, 0.90)</td>
</tr>
<tr>
<td>Absence of biliary stent</td>
<td></td>
<td>0.54 (0.36, 0.82)</td>
</tr>
</tbody>
</table>
Possible explanation of lack of effectiveness of immunotherapy in pancreatic cancer

Exclusion of anti-tumor cells

Infiltration by immunosuppressive cells

$M2 \text{macs}^{++}, T_{reg}, MDSC$

Dense fibrotic stroma

physical barrier

Image courtesy of Dr Cindy Neuzillet, Curie Institute Saint-Cloud
Summary

Metastatic Pancreatic Cancer
Treatment Spectrum

mPDAC management

- If MSI (1%) Checkpoint inhibitors
- If RAS WT Look for NRG1 fusion (<5%) Afatinib
- Borderline fit patients Gemcitabine
- Fit patients with no molecular alterations FOLFIRINOX
- Fit patients with no molecular alteration Gem + Abraxane
- If BRCA1-2 mutated (4-7%) Olaparib maintenance
Polling Question

• After successful completion of adjuvant treatment follow up should include:

• 1-Every 3 to 6 months, history and physical, CA19-9, CT chest/abdomen and pelvis for five year.

• 2-There is no evidence that routine imaging or CA19-9 level improve survival. So tests should be directed only based on clinical circumstances.
Follow up and surveillance

Surveillance every 3–6 mo for 2 years, then every 6–12 mo as clinically indicated:
- H&P for symptom assessment
- CA 19-9 level (category 2B)cc
- Chest CT and CT or MRI of abdomen and pelvis with contrast (unless contraindicated)

- There is no evidence that routine imaging or laboratory investigations are useful in detecting recurrences or metastases at a stage where interventions are curative. Early detection of asymptomatic metastases does not enhance survival.
- Investigations should be performed based on the clinical presentation of a patient who is suspected of having recurrent or metastatic disease.
At this time, the panel does not recommend neoadjuvant therapy for clearly resectable patients without high-risk features, except in a clinical trial. There is limited evidence to recommend specific neoadjuvant regimens off study, and practices vary with regard to the use of chemotherapy and chemoradiation. For selected patients who appear technically resectable but have poor prognostic features (ie, markedly elevated CA 19-9; large primary tumors; large regional lymph nodes; excessive weight loss; extreme pain) consideration can be given to neoadjuvant therapy after biopsy confirmation, and therapy should be administered preferably at or coordinated through a high-volume center.

**Surveillance of Patients with Resected Disease**

Although data on the role of surveillance in patients with resected pancreatic adenocarcinoma are very limited, recommendations are based on the consensus that earlier identification of disease may facilitate patient eligibility for investigational studies or other forms of treatment. The panel recommends history and physical examination for symptom assessment every 3 to 6 months for 2 years, then every 6 to 12 months as clinically indicated. CA 19-9 determinations and follow-up CT scans (chest, abdomen, and pelvis) with contrast every 3 to 6 months for 2 years after surgical resection are category 2B recommendations, because data are not available to show that earlier treatment of recurrences, following surgery, leads to better outcomes. In fact, an analysis of the SEER-Medicare database showed no significant survival benefit for patients who received regular surveillance CT scans.\(^{507}\)

Recommendations for surveillance of patients with locally advanced disease or unresectable disease vary based on the presence of metastases. However, the panel recommends that an alternative chemotherapy option be administered (eg, switching to a gemcitabine-based regimen if fluoropyrimidine-based therapy was previously used, or vice versa). When this period is 6 months or greater, repeating systemic therapy as previously administered or switching to any other systemic regimen is recommended.
Thank you

Questions and Comments