New Cancers after Transplant: Steps You Can Take to Reduce Your Risk

Celebrating a Second Chance at Life Survivorship Symposium

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New Cancers after Transplant: Steps You Can Take to Reduce Your Risk

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Following this workshop attendees will understand:

1. Potential secondary cancers that can occur following an allogeneic HCT
2. Potential secondary cancers that can occur following an autologous HCT
3. Incidence and risk of developing a secondary cancer after HCT
4. Medical tests and exams needed, and timing of same, to reduce the risk of developing a secondary cancer
5. Lifestyle modifications that can reduce the risk of a new cancer after HCT
Risk Factors Associated with Cancer Development

• Genetic predisposition
  • Family history
  • Syndromes (Telomere shortening)

• Aging

• Carcinogens
  • Smoking
  • Alcohol
  • Sun exposure
  • Viruses

• Cancer Treatment exposures
  • Chemotherapy
  • Radiation
  • Prolonged immunosuppression

• Immune deficiency syndrome/disorder
Risk Factors for Cancer after Transplant

- Graft versus host disease
- Medications used to treat/prevent GvHD
- Underlying disease and associated prior treatments
- Transplant-related chemotherapy or radiation
- Donor (versus own stem cells)
- Maintenance therapies after transplant
- New lifestyle risk factors and their interaction with transplant factors
Patient Scenario 1 – Allogeneic transplant

• 47 year-old male, with a history of acute lymphoblastic leukemia (ALL), underwent matched unrelated bone marrow transplantation. Is now a 3-year survivor.

• Presents to clinic with a 2-month history of a skin lesion on his forehead

• Relevant history
  • Male pattern baldness
  • Race/ethnicity: non-Hispanic white
  • Past employment: construction worker
  • Conditioning exposures: Total body irradiation (TBI), Etoposide
  • Graft versus host disease (GvHD) that resolved by 6 months after transplant
  • GvHD treatment included CellCept® for >3 months
New Cancers after Allogeneic Transplant

• In general, twice the expected risk of cancer compared to the general population

• The risk relative to the general population increases with time

• Highest relative risk of:
  • Skin, oral (lip, salivary gland, tongue), bone and soft tissue, liver
  • Specific to solid tumors: Lung, breast, colorectal, prostate, melanoma

• Patient and transplant-specific risk factors:
  • Older age, GvHD, radiation exposure
Lymphoproliferative Disorder after Transplant

- Presents within the first two years after transplant
- Associated with Epstein-Barr Virus activation
- Lymphoma clinical characteristics
- Associate with extent of immune suppression
  - T-cell depleted transplant
  - Severe GvHD
  - Cord blood stem cell source
- Treatment
  - Rituxan, chemotherapy
Patient Scenario 2 – Autologous Transplant

• 32 year-old female, with history of Hodgkin lymphoma (diagnosed at 17)
  • treated with ABVD x6 and chest radiation therapy
  • relapsed, and eventually underwent autologous transplant.
  • Is now a 15-year survivor.
• Feels a suspicious breast mass, and presents to her physician for work-up
• Relevant history
  • No family history of breast cancer
  • 10 pack-year smoking history
  • Original site of disease was the mediastinum
  • Received 20 Gy involved nodal chest radiotherapy (B)
  • Conditioning chemotherapy: BEAM
New Cancers after Autologous transplant - Risk Factors

• Older age
• Type cancer and associated therapies
• Post-transplant therapies, including maintenance
• Radiation therapy
  • Control of underlying disease
  • Used as part of conditioning (less often)
New Cancers after Transplant for Myeloma

• No overall increase in second cancers in myeloma patients who had a transplant compared to those who did not have a transplant.

• 50% increased risk of leukemia/lymphoma diagnoses compared to the general population

• New cancers do not impact overall mortality risk
  • *May be due to overall outcomes with baseline disease*

• Emerging concerns about Revlimid maintenance therapy
Myelodysplastic Syndrome and Acute Myeloid Leukemia

- Marrow injury from prior cancer therapies
- Increased risk after autologous transplant
- Associated treatment exposures
  - Alkylator chemotherapy (Cytoxan, ifosfamide)
  - Topoisomerase inhibitors (Etoposide)
  - Radiation
- Usually develop within the first 5 years after transplant
- Outcomes generally poor, unless additional more aggressive therapies are implemented (e.g. another [allogeneic] transplant)
Outcomes after Second Cancers

• Factors that impact outcomes
  • Type of cancer
  • Age of the patients
  • Stage at diagnosis
  • Extent of localization

• Effectiveness of drug therapy

• Chronic health conditions
  • General health
  • Organ function
  • GvHD and associated immunocompromised status
# Outcomes for Solid Tumors after Transplant

## 5-year survival rates %

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Survival Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Favorable</strong></td>
<td></td>
</tr>
<tr>
<td>Thyroid</td>
<td>83 (76-92)</td>
</tr>
<tr>
<td>Cervix</td>
<td>70 (57-86)</td>
</tr>
<tr>
<td>Prostate</td>
<td>69 (64-75)</td>
</tr>
<tr>
<td>Breast</td>
<td>69 (64-74)</td>
</tr>
<tr>
<td>Melanoma</td>
<td>68 (62-74)</td>
</tr>
<tr>
<td><strong>Intermediate</strong></td>
<td></td>
</tr>
<tr>
<td>Kidney</td>
<td>55 (47-65)</td>
</tr>
<tr>
<td>Oropharyngeal</td>
<td>53 (46-62)</td>
</tr>
<tr>
<td>Bladder</td>
<td>49 (39-62)</td>
</tr>
<tr>
<td>Ovarian</td>
<td>43 (32-58)</td>
</tr>
<tr>
<td>Sarcomas</td>
<td>42 (34-51)</td>
</tr>
<tr>
<td>Colorectal</td>
<td>41 (36-48)</td>
</tr>
<tr>
<td>Endometrial</td>
<td>40 (26-63)</td>
</tr>
</tbody>
</table>

## Poor

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Survival Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastric</td>
<td>29 (21-39)</td>
</tr>
<tr>
<td>Brain</td>
<td>21 (15-30)</td>
</tr>
<tr>
<td>Esophageal</td>
<td>21 (13-36)</td>
</tr>
<tr>
<td>Hepatobiliary</td>
<td>18 (11-31)</td>
</tr>
<tr>
<td>Lung</td>
<td>14 (11-19)</td>
</tr>
<tr>
<td>Pancreas</td>
<td>8 (3-18)</td>
</tr>
</tbody>
</table>

**Incidence of deaths from second breast, colorectal, or lung cancer**

*Graph showing cumulative incidence over time.*
What can survivors do to reduce their risk of new cancers after transplant?

• Reduce the factors that increase risk
  • Multi-hit process
  • Lifestyle modification (exercise, no smoking, low alcohol intake)

• Screening and close follow-up
  • Follow established guidelines for wellness
  • Increase surveillance that is personalized to risk/exposures

• Early detection
  • Optimize the outcomes associated with diagnosis
General Steps to Prevent Cancer

• No tobacco use
• Skin protection from UV/sun
• Maintain a healthy diet
• Keep a healthy weight and stay physically active
• Avoid risky behaviors
• Immunizations (HPV, Hepatitis vaccines)
• Empower yourself with your own and family’s history
Signs and Symptoms that Could Be Concerning

• New lumps or bumps
• Unusual fatigue, fevers, sweats
• Cough, hoarseness, chest pain
• Easy bleeding/bruising
• Abdominal pain, loss of appetite, difficulty swallowing
• New blood clots
• Sores and skin infections
• Changes in neurologic status (seizures, severe headaches, etc.)
Skin Cancers

• One of the most common post-transplant cancer
• Allogeneic > autologous transplant
• Prevent with sun avoidance or sunscreen
• Regular dermatologic visits – full body examination
• Early detection is especially important to optimize outcomes
• Compared to skin cancers in non-transplant populations, tend to be more aggressive
• Important to be aware of suspicious lesions
Suspicious Lesions

The ABCDEs of Detecting Melanoma

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asymmetry</td>
<td>Border</td>
<td>Color</td>
<td>Diameter</td>
<td>Evolving</td>
</tr>
</tbody>
</table>

NORMAL
- Symmetrical
- Borders Are Even
- One Color
- Smaller Than 1/4 Inch
- Ordinary Mole

MELANOMA
- Asymmetrical
- Borders Are Uneven
- Multiple Colors
- Larger Than 1/4 Inch
- Changing in Size, Shape and Color

Basal Cell Carcinoma
- Unexplained whitish scar-like area
- Shiny bump or nodule
- Reddish patch or irritated area
- Persistent non-healing sore
- Pink growth with slightly elevated rolled border and a crusted indentation in the center

Squamous Cell Carcinoma

SCCs tend to have a rough (keratotic) texture. While most grow slowly, there are variants that can grow rapidly over weeks to months.
How to check your skin

Step 1
Gather a hand mirror, hairdryer, two chairs or stools, and your partner, close friend, or family member, if you feel comfortable asking them for help. Go to a full-length mirror. Make sure you have plenty of light. The easiest time to do the check may be after a bath or shower.

Step 2
Stand in front of a full-length mirror and look at your whole face, including your nose, lips, mouth, ears, and behind the ears (use your hand mirror or ask your partner to help you see).

Step 3
Part your hair layer by layer and check your scalp in the mirror. You can use the hairdryer to help move your hair aside to see.

Step 4
Check your hands. Start with your palms and the back of your hands; look between your fingers and then under your fingernails. Take your shirt off, and continue to look down your wrists; look at the front and back of your forearms.

Step 5
Stand in front of the full-length mirror, bend your elbow, and check your upper arm and armpit. Now check the other side.

Step 6
Finish undressing and check your neck, chest, and the front of your upper body, including your stomach. Women should lift their breasts to see under the skin folds, and everyone should lift any folds of skin, as necessary.

Step 7
Using a hand mirror or with help from your partner, check the back of your neck, shoulders, back of your upper arms, and back of your upper body.

Step 8
Continuing to use the hand mirror or with help from your partner, check your lower back, buttocks, and the backs of your legs.

Step 9
Lastly, sit down and prop your leg up on a stool. Examine your groin area with your hand mirror. Check the front and sides of both legs, the top of your feet, between your toes, under your toenails, your heels, and the soles of your feet.

Last step
Enjoy knowing that you did something important for yourself and your loved ones by doing your skin self-check this month.
Oral Cancer

• Associated with history of GvHD

• Regular dental visits for comprehensive screening

• Low threshold for consultation with oral surgeon if there are suspicious lesions
Breast Cancer

- Risk factors – prior chest radiation therapy or total body irradiation (TBI)
- Annual breast examination at age 25 years or 8 years after radiation therapy/TBI, whichever comes first, no later than age 40
  - Clinical breast examination
  - Mammogram
  - Breast MRI
- Average risk
  - Age 20-40 years: clinical breast exam every 1-3 years
  - Age >40 years: annual exam and mammogram
Cervical Cancer

- Major risk factor is human papilloma virus (HPV)
- HPV vaccine prevention in younger patients
- Pelvic examinations, cervical smears
- Annual Pap test and HPV DNA test
Liver Cancer

• Risk factors
  • Hepatitis B – vaccinate/treat
  • Hepatitis C – treat
  • Alcohol – limit intake
  • Cirrhosis – due to chemo/GvHD, or other associated risk factors
  • Iron overload – phlebotomy, Iron cheating medications

• Outcomes generally poor if not caught early
Colorectal Cancer

• Curable at early stage with surgery alone
• Risk factors: GI GvHD, radiation exposure

• Tests
  • Colonoscopy
  • Sigmoidoscopy
  • Stool blood and DNA testing

• First colonoscopy recommended at 45-years-old, screen up to 75-years-old

• More frequently/earlier if higher risk (pediatric patients treated with abdominal radiation therapy [RT])
Lung cancer

• Strong risk associated with smoking

• Exponentially high risk if smoker and there is a history of chest radiation exposure

• Screening with low-dose CT of chest for the following high-risk groups
  • >55y and >30 pack-year smoking history
  • ≥50y and ≥20y pack-year smoking history with another risk factor
Resources to Keep You Engaged

BMTinfonet.org
BLOOD & MARROW TRANSPLANT INFORMATION NETWORK

ASCO© Cancer.Net
Doctor-Approved Patient Information

LEUKEMIA & LYMPHOMA SOCIETY®
fighting blood cancers
What We Encourage Survivors To Do

• Learn about the treatment you received

• Get regular check-ups focusing on the health risks related to your cancer treatment

• Work with healthcare providers to develop a long-term follow-up plan

• Make healthy choices

“You are the most important member of your healthcare team!”
Questions?

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Let Us Know How We Can Help You

Visit our website: bmtinfonet.org

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Phone: 888-597-7674 or 847-433-3313

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