Importance of Mutational Testing in GIST

Denisse Montoya, MSc
Senior Director
Data Management & Research
TIMELINE

Tumor Found
- Diagnostic Imaging Scans

Tumor Tissue
- Biopsy
- Surgery

Testing
- Mutational Testing
- Genetic Testing

Treatment
- FDA Approved treatment
- Clinical Trial
## BIOMARKER TESTING

<table>
<thead>
<tr>
<th>Pathology Testing</th>
<th>Mutational Testing/ Genomic Sequencing</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Aim: Provides a diagnosis after a histological examination of the tissue samples</td>
<td>• Aim: Identify the mutations that are driving the tumor development</td>
</tr>
<tr>
<td>• Examines: Proteins</td>
<td>• Examines: Genes</td>
</tr>
<tr>
<td>• Tools: Microscope</td>
<td>• Tools: NGS</td>
</tr>
<tr>
<td>• Turnaround time: 1 to 2 days</td>
<td>• Turnaround time: 3-6 weeks FFPE</td>
</tr>
<tr>
<td>• Common Results in GIST: c-KIT, DOG1, Desmin</td>
<td>• Common results: KIT, PDGFRA</td>
</tr>
</tbody>
</table>
TYPES OF TESTING

• Basic Mutational Testing:
  In house testing in most hospitals
  Specific small range of genes (about 2-3 genes)
  Tumor tissue from biopsy or surgery

• Advanced Genomic Sequencing:
  Broad range of genes (600-2000+)
  Specialized laboratories
  Tumor tissue from biopsy or surgery

• Genetic Testing:
  Usually done after a SDH mutation
  This is performed with normal tissue (saliva or blood)
WHY IS THIS IMPORTANT FOR MY GIST?

GIST
Mutational testing
Precision medicine
Standard of care
No mutational testing
Median OS in Patients from LRG Patient Registry

All LRG patients
With or Without Mutational Testing

Percent survival

Overall Survival - Years

P value < 0.0001
Hazard Ratio 0.5482

Median Overall Survival
With mutation testing 22.5 years
Without mutation testing 10.3 years
Mutational Testing Rate

- About **30%** of GIST patients have received mutational testing
- **54%** LRG patients know their mutations
Summary:

35 years old female patient; diagnosed at age 32 (2018)

Patient was pregnant and during her first trimester visit to her OBGYN a “fibroid” was observed by her doctor. The doctor recommended her to wait until her due date since the fibroid did not look suspicious

During her c-section (06/15/2018), surgeons found a 15x11x7.5 cm tumor attached to her small intestine with multiple metastasis on peritoneum measuring 5.7x5.5cm and 3.5cm

Mitotic rate: 10/50hpf

IHC stainings: CD117 positive; Ki-67: 25%

Patient started imatinib 400mg (07/2018)

Initial mutational testing report showed (07/2018): KIT/PDGFRα WT

Patient stopped treatment due to her WT mutation

Advanced testing was performed (09/2018) showing KIT exon 11 C.1648-3_1673del

Patient re-started imatinib 400mg (09/2018)

01/2019: Significant shrinkage was observed
06/2019: No tumors were observed – NED
The Life Raft Group launched a **Tissue Testing Initiative** in 2021 to improve the understanding of biomarker testing among the GIST cancer community and increase the number of patients tested by providing FREE Next-Generation Sequencing (NGS) to eligible patients.

*Tissue Bank Members* 
486

Total Number of Tissue
957

*All tissue bank members are part of the LRG Patient Registry so that we are able to connect clinical data to all tissue samples in our Tissue Bank*
THANK YOU!

We are grateful for all our patients, caregivers, and key stakeholders that continue to support our efforts to move GIST research forward. We are not able to do it without you.

DENISSE MONTOYA
dmontoya@liferaftgroup.org
www.liferaftgroup.org