Oncolytic virus therapies in clinical trials

Phase breakdown of oncolytic virus trials
Today the clinical trial environment for oncolytic viruses is in a phase of rapid growth. In little over 15 years, 148 clinical trials have been registered, with more than 1,000 investigators trialing 61 potential therapies. The global distribution of these trials has been primarily dominated by the US and Europe, with only 21% of the rest of the world partaking in these trials.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Number of Trials</th>
<th>Mean Enrollment</th>
<th>Mean Recruitment Period</th>
<th>Mean Recruitment Rate</th>
<th>Median Sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>67</td>
<td>265 subjects</td>
<td>32 months</td>
<td>0.132 subjects/month</td>
<td>2 sites</td>
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<tr>
<td>2</td>
<td>46</td>
<td>225 subjects</td>
<td>32 months</td>
<td>0.119 subjects/month</td>
<td>8 sites</td>
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<tr>
<td>3</td>
<td>46</td>
<td>40 subjects</td>
<td>12 months</td>
<td>0.010 subjects/month</td>
<td>12 sites</td>
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<td>11</td>
<td>17 subjects</td>
<td>9 months</td>
<td>0.003 subjects/month</td>
<td>0 sites</td>
</tr>
</tbody>
</table>

Top 10 commercial sponsors
Currently, there are 4 companies to date with more than 10 trials investigating oncolytic viruses. The acquisition of BioVex and its development of T-Vex in 2011 has provided Amgen the leadership in the oncolytic virus race. Followed closely by Amgen are Oncolytics Biotech with the Reo virus based Plerasep being trialed in Multiple Myeloma, Lung cancer and the challenging Head & Neck cancer. With a focus on Liver and Colorectal cancer, SillaJens GM-CSF-rpoxivirus has shown an increase in OS in a small cohort of Hepatocellular carcinoma patients and is certainly a contender. Finally, the ICAM-1/DAF targeting Cavatak (coksacilleirus a21) from the Australian biotech Viralytics is being trialed in Melanoma among other cancer types.

Top 5 oncolytic viral treatments in clinical trials
Not surprisingly, the top 5 companies also head up the top 5 oncolytic virus compounds. Less expected is the Adenovirus-based DNX-2401 by DNAtrix, who as of July 2017 has a number of ongoing trials in Gliomas with an emphasis on pediatric patients, such as NCT03178032 and 2016-001577-33.
Global concentration of oncolytic virus investigators

Taking a look at all 148 trials of oncolytic viruses and identifying the associated investigators involved in these trials shows that clinical research is performed primarily on the US East coast and in central or northern Europe, corresponding to previously discussed results.

Augment searches with advanced text filtering

Using an advanced text search to identify trials that target treatment naïve, advanced or metastatic cancers utilizing a combination of oncolytic viruses and targeted Immune Oncology or chemotherapy, reveals 83 trials.

Three sponsors in particular are testing their viruses in combination. Amgen currently is at all stages of development with combinations of PD-L1 and CTLA-4 targeting compounds, Tyrosine kinases and mitotic inhibitors. Oncolytics Biotech is a mid to late stage development with some standards of care and DNAtrix are at early stage development involving PD-L1 or standard Alkylating agents. Much like the Immune Oncology space combinations may hold the key to success.

Presentation volume over the last 10 years

When examining the presentation of oncolytic virus abstracts across conferences in ta-Scan, there is an exponential rise in discussions and results being shared from 2011 onward.

Learn more about ta-Scan at: https://www.ta-scan.com/request-webinar

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