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Site of metastasis (SoM) and Its Impact on Clinical Outcomes in 8 Cancer Cohorts (Abstract #6590)

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Background

- The prognosis of metastatic cancer is in general poor. This can be affected by several factors including age, histology, treatment and site of metastasis (SoM).
- Deeply curated real world data is valuable for analysing various clinical factors affecting patient outcomes and informing treatment decisions.
- In this study we have done a systematic analysis of the metastatic sites at initial metastatic diagnosis (MDx) in 8 solid cancers and their impact on time to metastasis from initial cancer diagnosis and patient outcomes.
- In addition this study compares patients with single site of metastasis (SSM) to those with multiple site of metastasis (MSM) at the time of initial MDx.

Methods

1. The deeply curated Patient360™ Datasets for 8 solid cancers were used for this analysis
2. Cancer cohorts included: Breast, Non-Small Cell Lung Cancer (NSCLC), Bladder, Melanoma, Prostate, Pancreas, Renal and Liver
3. Only Patients who have confirmed MDx with information on the site of metastasis curated from unstructured notes are included in this analysis.
4. Patients were categorized as having either a single site of metastasis (SSM) or Multiple Site of Metastases (MSM) based on number of metastatic sites at MDx
5. SoM's included are Bone, Brain, Liver, Adrenal Gland and Lung.
6. Rarer sites such as spleen, intestines, thyroid etc. are grouped together and labelled as 'Others'
7. Time to metastasis (TTM) was calculated as the interval between initial diagnosis to MDx.
8. The patients' outcomes were compared using Overall Survival (OS) and Progression Free Survival (PFS). These were calculated from MDx till date of death/disease progression respectively.

Results

	Cancer Cohorts Distributions				SoM Distributions					
	Patients	Metastatic	SSM	MSM	Bone	Liver	Brain	Lung	AG	Other
Breast	53027	12786	7150	5636	3712	609	376	1379	18	1006
NSCLC	52845	25655	15423	10232	3293	977	3914	5655	717	867
Bladder	14781	3735	2522	1213	515	262	69	457	17	1212
Melanoma	11622	3368	1773	1595	138	125	316	463	19	638
Prostate	10683	6671	5209	1462	4166	44	14	119	1	865
Pancreas	7681	4495	3497	998	58	2422	3	322	16	676
Renal	5708	5395	3323	2072	711	190	116	1314	216	759
Liver	5068	1298	1039	259	284	-	7	333	74	341

Table 1: Distributions of cancer cohorts and SoM for patients with SSM

- 161K patients were included in this study of which 63K patients had a SoM.
- Each cancer type has a preferred SoMs. For example, in breast and prostate cancer, bone metastasis accounts for 50-80 % of the metastatic cohort whereas pancreatic cancer metastasizes preferentially to the liver, renal cancer to the lung and NSCLC to the contralateral lung (Table 1).

	SSM	Bone	Liver	Brain	Lung	AG	Other	MSM
Breast	4.93	4.61	3.54	3.61	6.41	2.86	5.25	4.47
NSCLC	0.93	0.78	0.96	0.9	1.06	0.77	0.84	0.51
Bladder	1.87	1.39	1.94	1.84	1.98	1.45	2.03	1.99
Melanoma	3.79	3.96	3.26	3.75	4.05	3.63	3.83	3.81
Prostate	4.48	4.3	6.15	4.85	6.66	1.71	4.97	3.28
Pancreas	0.41	0.63	0.27	1.66	0.97	0.59	0.63	0.29
Renal	2.80	2.04	2.64	2.45	2.67	2.91	3.77	1.99
Liver	0.98	0.99	-	0.67	0.87	0.93	1.1	0.86

Table 2: TTM (in years) for each cancer cohort: overall for SSM and MSM and by SoM at Dx

- The TTM is largely governed by the primary cancer and not very dependent on the SoM (Table 2).
- The TTM for SSM was comparable to MSM at Dx in most cancers except NSCLC, Pancreatic and Prostate Cancer.

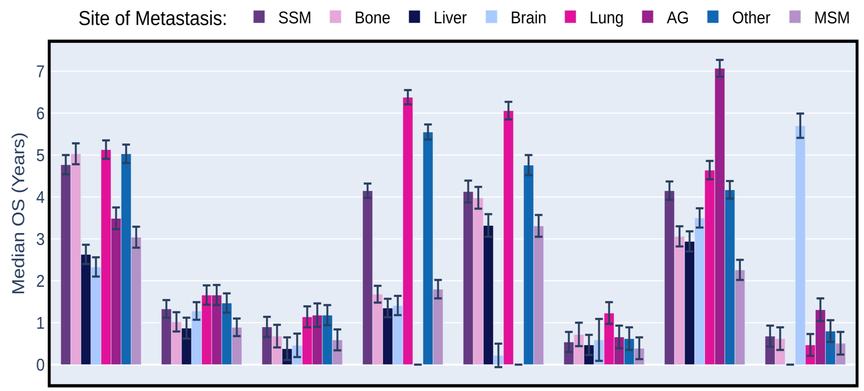

Figure 1: Median Overall Survival by Site of Metastasis

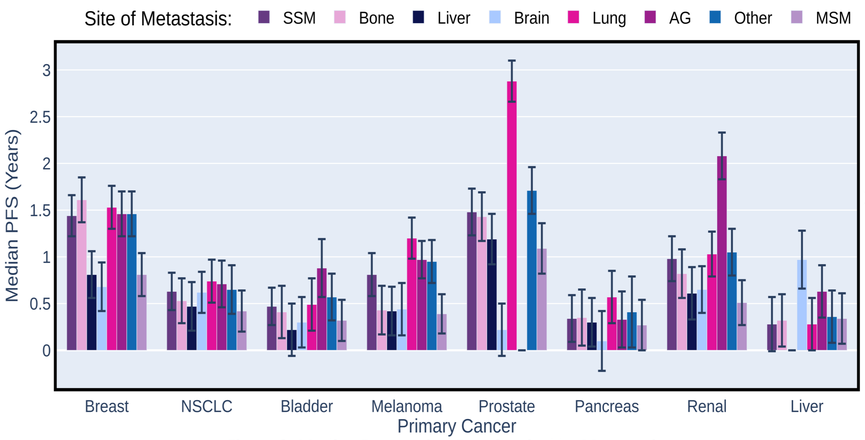

Figure 2: Median Progression Free Survival by Metastasis

- The overall values of the OS/PFS were primarily governed by the primary cancer type (Figures 1 & 2).
- On an average, OS and PFS for patients with SSM was better than patients with MSM within the same primary cancer type.
- Within a cohort, there can be significant differences in the prognosis of patients based on the SoM. For example, in breast cancer the OS of the brain & liver SoM was worse than any other site and even worse than MSM.
- The trends in PFS were similar to OS across cancer cohorts, even though the effect sizes were smaller.

Note: The results presented here are on updated data

Conclusions

In this real-world study, we demonstrate that the patterns of SoM and prognosis are dependent on the primary cancer type. Further, there is a correlation between the average TTM and the OS of the cohort. Such insights from a large real-world data study can impact clinical decisions regarding the aggressiveness of treatment based on the primary cancer type as well as the metastatic site.