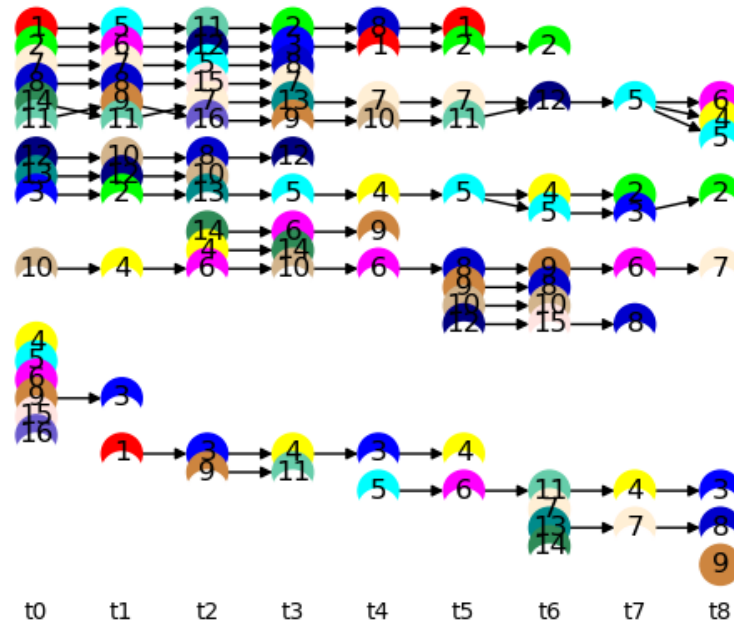# C. A. Patient Summary
Patient Study Based on Lesion Graph

Di Veroli B., Joskowicz L. A Graph Theoretic Approach for Analysis of Lesion Changes and Lesions Detection Review in Longitudinal Ontological Imaging, CASMIP Hebrew University, 2023

Lesion Count According to Classification

Time Layer	complex	disappeared	lone	merged	new	persistent	split
0	0	0	0	0	16	0	0
1	0	5	0	0	1	11	0
2	0	1	0	0	3	11	0
3	0	1	0	0	0	13	0
4	0	5	0	0	1	8	0
5	0	1	0	0	3	7	1
6	0	2	2	1	1	8	0
7	0	5	0	0	0	6	1
8	0	2	1	0	0	7	0

Tracking the Changes in the Total Volume of the Tumors From One Scan to the Previous One

Time Stamp	Total Volume [cm³]	Volume Difference Percentage	Volume Difference [cm³]
0	16.9	-	-
1	1.46	-91%	-15.44
2	1.64	+12%	+0.17
3	3.34	+104%	+1.7
4	12.96	+288%	+9.62
5	15.79	+22%	+2.83
6	13.21	-16%	-2.58
7	12.1	-8%	-1.11
8	8.61	-29%	-3.49

Individual Lesion Changes

New Lesions

Lesion 9 appeared for the first time in the last scan.

Disappeared Lesions

Over time, 22 lesions disappeared.
5 lesions were last identified in 05.11.17.
1 lesion was last identified in 10.01.18.
1 lesion was last identified in 22.04.18.
5 lesions were last identified in 13.12.18.
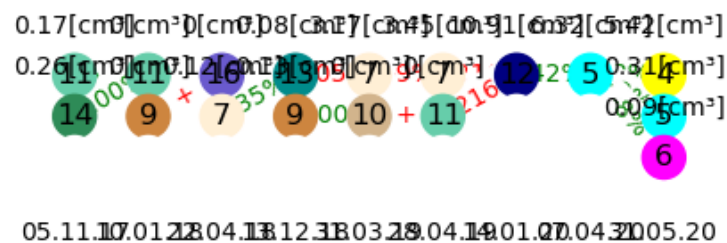1 lesion was last identified in 31.03.19.
2 lesions were last identified in 28.04.19.
5 lesions were last identified in 14.01.20.
2 lesions were last identified in 07.04.20.
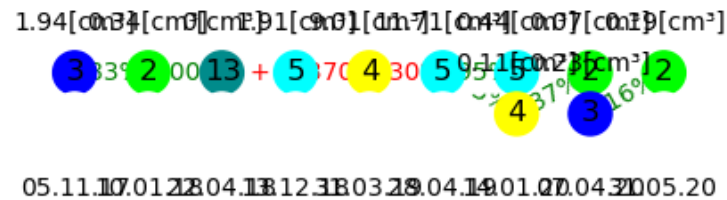
Lesions Appearing in Multiple Scans

• The History of Lesions 4, 5, 6

Lesion volume has decreased by 5% from previous scan to current scan. Volume shows both increases and decreases over time from first scan to last scan.

Classification of connected component: complex.

• The History of Lesion 2

1.94[cm³] 34[cm³] 0[cm³] 1.91[cm³] 01[cm³] 1.71[cm³] 44[cm³] 07[cm³] 1.9[cm³]
9.11[cm³] 0.23[cm³]

3 33% 2 00 13 + 5 370 4 30 5 95-15 5 2 2
4 37% 3 16%

05.11.10 7.01.21 28.04.11 3.12.31 B03.28 9.04.14 9.01.07 0.04.32 005.20

Lesion volume has decreased by 184% from previous scan to current scan. Volume shows both increases and decreases over time from first scan to last scan.
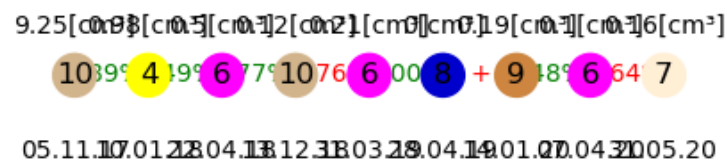
Classification of connected component: split.

• The History of Lesion 7

9.25[cm³] 98[cm³] 0.5[cm³] 1.2[cm³] 2[cm³] 0[cm³] 0.19[cm³] 0.1[cm³] 6[cm³]

10 39% 4 99% 6 77% 10 76 6 00 8 + 9 48% 6 64% 7

05.11.10 7.01.21 28.04.11 3.12.31 B03.28 9.04.14 9.01.07 0.04.32 005.20

Lesion volume has decreased by 64% from previous scan to current scan. Volume shows both increases and decreases over time from first scan to last scan.
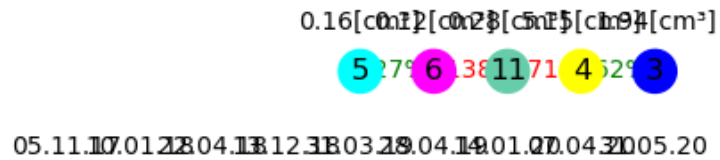
Classification of connected component: linear.

• The History of Lesion 3

0.16[cm³] 0.12[cm³] 0.28[cm³] 0.15[cm³] 0.94[cm³]

5 27% 6 38% 11 71% 4 52% 3

05.11.17 07.01.22 08.04.13 12.31.13 03.28.14 09.04.14 01.07.20 04.31.20 05.20

Lesion volume has decreased by 752% from previous scan to current scan. Volume shows both increases and decreases over time from first scan to last scan.

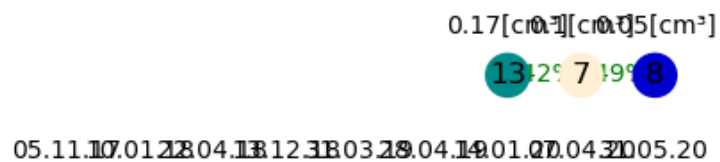Classification of connected component: linear.

• **The History of Lesion 8**

0.17[cm³] 0.1[cm³] 0.05[cm³]

13 42% 7 19% 8

05.11.17 07.01.22 08.04.13 12.31.13 03.28.14 09.04.14 01.07.20 04.31.20 05.20

Lesion volume has decreased by 54% from previous scan to current scan. Volume shows both increases and decreases over time from first scan to last scan.

Classification of connected component: linear.