

On-line/Supplementary Table 1: IWK Health Centre vs BC Children's Hospital Variables

| | IWK Health Centre n (%) | BC Children's Hospital n (%) | <i>P</i> |
|-------------------------------|----------------------------|------------------------------------|----------|
| Age at diagnosis (yrs) | | | 0.49 |
| Median (IQR) | 7.3 (2.6-12.3)* | 5.3 (2.3-10.9)* | |
| Sex | | | 0.90 |
| Male | 14 (45) | 17 (44) | |
| Female | 17 (55) | 22 (56) | |
| Progression of Disease | | | 0.53 |
| Yes | 19 (61) | 21 (54) | |
| No | 12 (39) | 18 (57) | |
| Tumor Location | | | 0.79 |
| Brainstem | 2 (7) | 2 (5) | |
| Cerebral Hemisphere | 12 (39) | 17 (44) | |
| OPHG | 6 (19) | 8 (20) | |
| Posterior Fossa | 11 (35) | 10 (26) | |
| Spinal Cord | 0 (0) | 2 (5) | |
| Tumor Mutation Status | | | 0.088 |
| V600E | 12 (39) | 7 (18) | |
| <i>KIAA1549:BRAF</i> Fusion | 13 (42) | 17 (44) | |
| Wild-type/Other | 6 (19) | 15 (38) | |

*=mean and IQR

Abbreviations: IQR, interquartile range; OPHG, Optic pathway/hypothalamic glioma

Univariate analyses were used to compare data from the two hospitals.

On-line/Supplementary Table 2: Univariate Analysis of Imaging Characteristics by Molecular Group

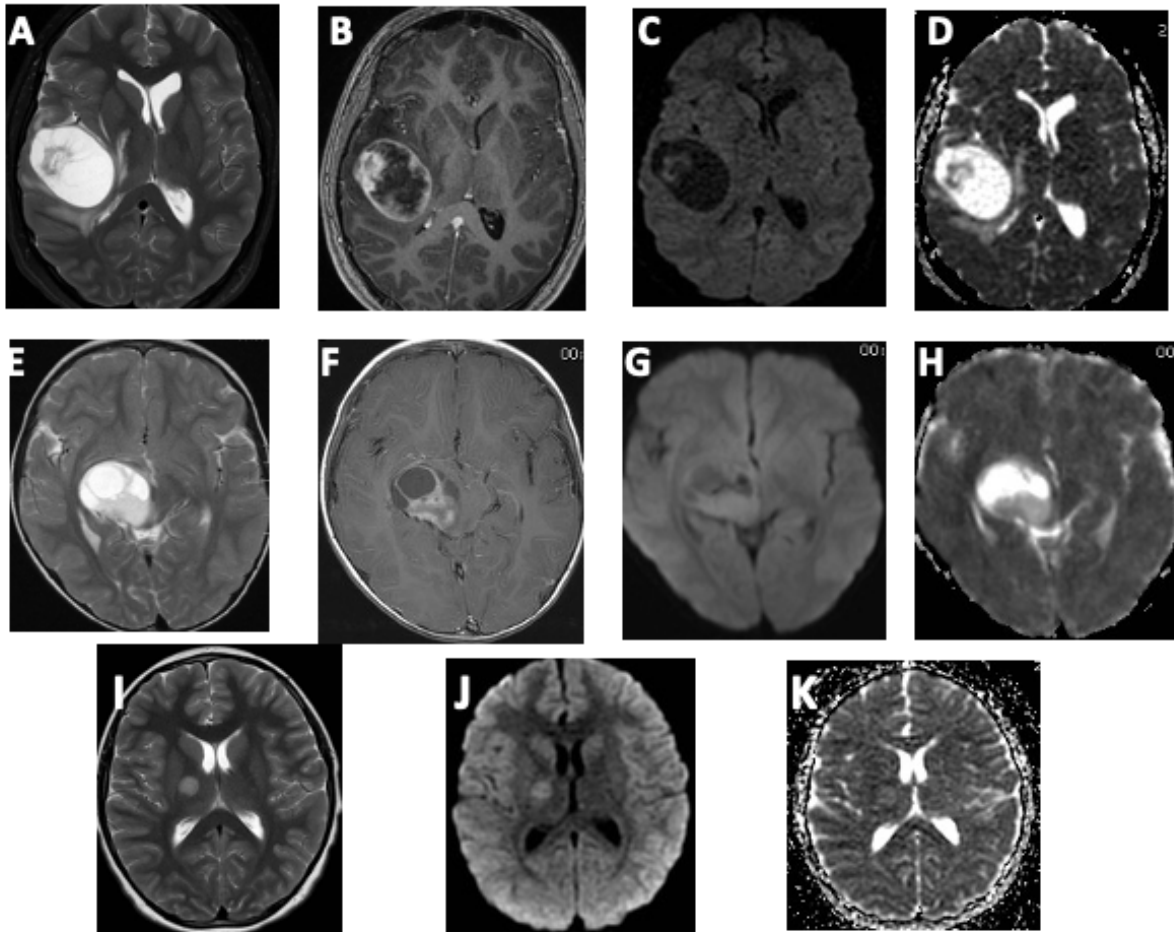
| | <i>KIAA1549- BRAF Fusion n (%)</i> | <i>BRAF V600E n (%)</i> | <i>Wild Type/Other s n (%)</i> | <i>P₁ (Fusion vs V600E vs WT)</i> | <i>P₂ (Fusion vs V600E)</i> |
|--|--|---------------------------------|--|---|---|
| Product of perpendicular diameters (Trans and AP; mm²) | | | | 0.0045 | 0.0965 |
| Mean | 2504 (1553)* | 1989 (2041)* | 1163 (1039)* | | |
| Presence of Cysts | | | | 0.1043 | 0.0945 |
| Yes | 25 (83) | 11 (58) | 13 (62) | | |
| No | 5 (17) | 8 (42) | 8 (38) | | |
| Peritumoral Vasogenic Oedema | | | | 0.2272 | 0.1608 |
| No edema | 9 (30) | 5 (26) | 8 (38) | | |
| Mild | 16 (53) | 6 (32) | 6 (29) | | |
| Moderate | 5 (17) | 8 (42) | 6 (29) | | |
| Massive | 0 (0) | 0 (0) | 1 (5) | | |
| Mass Effect | | | | 0.0022 | 0.0053 |
| No mass effect | 0 (0) | 2 (11) | 3 (14) | | |
| Mild | 2 (7) | 7 (37) | 9 (43) | | |
| Moderate | 18 (60) | 8 (42) | 7 (33) | | |
| Massive | 10 (33) | 2 (11) | 2 (10) | | |
| Diffusion Restriction | | | | 0.0042 | 0.0183 |
| Yes | 0 (0) | 4 (21) | 0 (0) | | |
| No | 30 (100) | 15 (79) | 21 (100) | | |
| ADC Ratio | | | | 0.0030 | 0.0003 |
| Mean | 3.90 ± 0.59* | 2.01 ± 0.75* | 4.59 ± 2.09* | | |
| Degree of Enhancement | | | | <0.0001 | 0.0036 |
| Moderate | 2 (7) | 4 (21) | 2 (10) | | |
| Diffuse | 26 (87) | 8 (42) | 6 (29) | | |
| None or Minimal | 2 (7) | 7 (37) | 13 (62) | | |
| Signals on T2W1 and FLAIR | | | | 0.4785 | 0.3629 |
| High | 28 (93) | 16 (84) | 19 (95) | | |
| Isointense | 2 (7) | 3 (16) | 1 (5) | | |
| T1 Signal | | | | 0.0023 | 0.0080 |
| Mainly Hypointense | 28 (93) | 11 (58) | 19 (90) | | |
| Mainly Isointense | 2 (7) | 8 (42) | 1 (5) | | |
| Hemorrhage/Calcification | | | | 0.7016 | 0.6359 |
| Yes | 2 (7) | 2 (11) | 3 (14) | | |
| No | 28 (93) | 17 (89) | 18 (86) | | |
| Hydrocephalus | | | | <0.0001 | 0.0002 |
| Yes | 25 (83) | 5 (26) | 6 (29) | | |

| | | | | | |
|------------------------|----------|---------|---------|--------|--------|
| No | 5 (17) | 14 (74) | 15 (71) | | |
| Margin | | | | 0.0002 | 0.0001 |
| Infiltrative | 4 (13) | 13 (68) | 10 (48) | | |
| Well defined | 26 (87) | 6 (32) | 11 (52) | | |
| MR Spectroscopy | | | | | |
| Cho/Cr | | | | 0.3714 | 0.1373 |
| High | 11 (100) | 5 (71) | 3 (100) | | |
| Low | 0 (0) | 1 (14) | 0 (0) | | |
| Normal | 0 (0) | 1 (14) | 0 (0) | | |
| Cho/NAA | | | | 0.2143 | 0.1373 |
| High | 11 (100) | 5 (71) | 3 (100) | | |
| Low | 0 (0) | 2 (29) | 0 (0) | | |
| Lac/Cr | | | | 0.0194 | 0.1373 |
| High | 11 (100) | 5 (71) | 1 (33) | | |
| No lactate | 0 (0) | 2 (29) | 2 (67) | | |

*=mean and standard deviation

Abbreviations: Trans, transverse; AP, anterior-posterior; Cho/Cr, Choline/Creatine; Cho/NAA, Choline/N-acetylaspartate; Lac/Cr, Lactate/Creatine

Supplementary material (Figure): This figure displays images of each molecular group within the similar anatomical location for comparative purposes.



First row (A-D): Right temporal lobe BRAF V600E mutated tumor showing complex cystic/solid component on T2WI (Panel A), rim enhancement (Panel B) and diffusion restriction (Panel C and D). There is mild mass effect with moderate peritumoral edema.

Second row (E-H): Right thalamic centred BRAF fusion tumor lesion showing complex cystic-solid tumor on T2WI (Panel E), moderate to diffuse enhancement within the solid component (Panel F), without definite diffusion restriction (Panel G and H). The mass shows significant mass effect against surrounding structure with a leftward deviation of midline (Panel E, F, G and H).

Third row (I-K): Right thalamic Wild-Type tumor showing solid appearance on T2WI (Panel I), no diffusion restriction (Panel J and K). No mass effect or surrounding edema is seen (Panel I, J and K). The post-contrast T1WI was not obtained for this patient.