

Supplementary material

Table 1 Selected cases from literature review

Ref.	Case n	Sex	Age at Mtx	Primary tumour site	Diagnosis	Metastatic sites	Months before Mtx onset	Surgery	RT	CH T	VA/V P shunt	IntraC NS Mtx
Metastatic oligodendrogliomas												
James, 1951 ^[1]	1	F	29	R parietal lobe	Oligodendroglioma	Bone, cervical lymphnodes, lungs, scalp	48	Yes	Yes	No	NA	Yes
Spataro, 1968 ^[2]	1	F	10	R parietal lobe	Oligodendroglioma	Bone, scalp, soft tissue, liver	36	Yes	Yes	No	NA	Yes
Braun, 1968 ^[3]	1	F	26	L frontal lobe	Oligodendroglioma	Temporal subcutaneous tissues	1	NA	No	No	No	NA
Jellinger, 1969 ^[4]	1	F	60	L frontal lobe	Oligodendroglioma	Bone	30	Yes	No	No	NA	Yes
Smith,1969 ^[5]	1	M	45	L frontal lobe	Oligodendroglioma	Bone marrow	NA	Yes	NA	NA	NA	NA
Eade, 1971 ^[6]	1	F	22	Spinal cord	Oligodendroglioma	Bone	8	Yes	No	NA	No	NA

Eade, 1971 ^[6]	2	M	24	L thalamus	Oligodendroglioma	Bone	10	Yes	Yes	NA	Yes	NA
Kernohan, 1971 ^[7]	1	N A	3,5	NA	Oligodendroglioma	Lymphnodes, lungs, adrenal	NA	NA	NA	NA	NA	NA
Cappelaere, 1972 ^[8]	1	M	22	L temporal lobe	Oligodendroglioma	Bone, cervical lymphnodes, parotid gland	22	Yes	No	NA	NA	Yes
Cappelaere, 1972 ^[8]	2	F	58	R frontal lobe	Oligodendroglioma	Bone, paravertebral lymphnodes	12	Yes	Yes	NA	NA	Yes
Brander, 1972 ^[9]	1	F	42	L thalamus	Oligodendroglioma	Pleura, lung	144	No	Yes	NA	NA	NA
Schuster, 1976 ^[10]	1	F	61	L fronto-parietal lobe	Oligodendroglioma	Bone	1	Yes	No	No	No	NA
Kummer, 1977 ^[11]	1	M	47	R parietal lobe	Oligodendroglioma	Bone, paratracheal lymphnodes, lung	84	Yes	Yes	NA	NA	Yes

Becker, 1978 ^[12]	1	F	1,5	L temporo-occipital region	Oligodendroglioma	Peritoneum, diaphragm, pericardium, liver	1	Yes	No	Yes	NA	Yes
Ordonez, 1981 ^[13]	1	F	34	L frontal lobe	Oligodendroglioma	Bone, masseter, cervical lymphnodes	16	Yes	Yes	No	Yes	Yes
Newman, 1985 ^[14]	1	M	41	R fronto-parietal region	Oligodendroglioma	Bone marrow	6	Yes	Yes	No	No	No
Nakamura, 1985 ^[15]	1	M	38	R frontal lobe	Anaplastic oligodendroglioma	Bone	72	Yes	Yes	Yes	NA	Yes
Macdonald, 1989 ^[16]	1	F	39	NA	Oligodendroglioma	Bone, cervical lymph nodes	36	Yes	No	No	NA	NA
Macdonald, 1989 ^[16]	2	N A	47	NA	Oligodendroglioma	Bone, cervical lymph nodes	36	Yes	No	No	NA	NA
Macdonald, 1989 ^[16]	3	N A	17	NA	Oligodendroglioma	Bone, scalp, cervical lymphnodes	86	Yes	No	No	NA	NA

Macdonald, 1989 ^[16]	4	N A	35	NA	Oligodendroglioma	Bone, scalp, cervical lymphnodes	34	Yes	Yes	No	NA	NA
Macdonald, 1989 ^[16]	5	N A	49	NA	Oligodendroglioma	Bone	24	Yes	Yes	Yes	NA	NA
Macdonald, 1989 ^[16]	6	M	28	NA	Oligodendroglioma	Bone	37	Yes	Yes	Yes	NA	NA
Macdonald, 1989 ^[16]	7	N A	40	NA	Oligodendroglioma	Bone	76	Yes	Yes	Yes	NA	NA
Steininger, 1993 ^[17]	1	M	39	R temporo-parietal region	Oligodendroglioma	Cervical lymphnodes	0	No	Yes	No	No	NA
Gerrard, 1995 ^[18]	1	M	55	R parietal lobe	Anaplastic oligodendroglioma	Bone marrow	10	Yes	Yes	No	NA	NA
Schröder, 1995 ^[19]	1	M	49	R parietal lobe	Anaplastic oligodendroglioma	Cervical lymphnodes	NA	Yes	NA	NA	NA	NA
Monzani, 1996 ^[20]	1	M	58	R sphenoid region	Oligodendroglioma	Chest wall, bone marrow,liver	48	Yes	Yes	Yes	NA	NA

Baldus, 1997 ^[21]	1	M	55	R fronto- parietal region	Oligodendrogli oma →Anaplastic oligodendrogli oma	Bone marrow	122	Yes	Yes	Yes	No	Yes
Dawson, 1997 ^[22]	1	M	58	R frontal lobe	Anaplastic oligodendrogli oma	Bone marrow, liver	3	Yes	No	No	NA	Yes
Williams, 1997 ^[23]	1	F	41	R frontal lobe	Oligodendrogli oma	Parotid gland	36	Yes	Yes	No	NA	Yes
Finsterer, 1998 ^[24]	1	M	62	R temporo- parietal region	Anaplastic oligoastrocyto ma	Pleura, bone	144	Yes	No	No	No	Yes
Pectasides, 2002 ^[25]	1	M	17	L temporal lobe	Anaplastic oligodendrogli oma	Lung	19	Yes	Yes	No	NA	No
Garner, 2002 ^[26]	1	M	36	R frontal lobe	Oligodendrogli oma	Bone marrow	84	Yes	No	No	NA	Yes

Sharma, 2003 ^[27]	1	M	51	R frontal lobe	Anaplastic oligodendrogli oma	Bone marrow	9	Yes	Yes	No	No	No
Choon, 2003 ^[28]	1	M	33	NA	Anaplastic oligodendrogli oma	Bone marrow	36	Yes	Yes	Yes	NA	No
Anand, 2003 ^[29]	1	M	50	L frontal lobe	Anaplastic oligodendrogli oma	Bone marrow	7	Yes	NA	NA	NA	No
Kim, 2003 ^[30]	1	M	59	R frontal lobe	Oligodendrogli oma →Anaplastic oligodendrogli oma	Bone	108	Yes	Yes	Yes	No	Yes
Monabati, 2003 ^[31]	1	F	5	L fronto- temporal lobe	Anaplastic oligodendrogli oma	Cervical lymphnodes	3	Yes	NA	NA	NA	NA
Morrison, 2004 ^[32]	1	M	58	R frontal lobe	Anaplastic oligodendrogli oma	Bone	29	Yes	Yes	No	NA	No

Giordana, 2004 ^[33]	1	M	57	L parietal	Oligodendrogli oma →Anaplastic oligodendrogli oma	Bone		86	Yes	Yes	Yes	NA	Yes
Wang, 2004 ^[34]	1	F	47	R frontal lobe	Oligodendrogli oma →Anaplastic oligodendrogli oma	Parotid gland		71	Yes	Yes	No	NA	Yes
Al-Ali, 2005 ^[35]	1	M	38	R temporal lobe	Oligodendrogli oma →Anaplastic oligodendrogli oma	Bone, marrow	bone	120	Yes	Yes	Yes	NA	Yes
Merrell, 2006 ^[36]	1	M	42	L fronto- parietal lobe	Anaplastic oligodendrogli oma	Bone, marrow	bone	40	Yes	Yes	No	No	Yes

Merrell, 2006 ^[36]	2	F	73	L frontal lobe	Anaplastic oligodendrogli oma	Bone, bone marrow	13	Yes	Yes	No	No	No
Lee, 2006 ^[37]	1	F	64	L frontal lobe	Oligodendrogli oma	Pleura and femoral bone	84	Yes	Yes	No	NA	Yes
Han, 2006 ^[38]	1	F	50	R temporal lobe	Anaplastic oligodendrogli oma	Lungs, liver	28	Yes	Yes	Yes	Yes	Yes
Uzuka, 2007 ^[39]	1	F	29	Frontal lobe	Anaplastic oligodendrogli oma	Bone, liver, pancreas, spleen, lungs, mediastinal lymphnodes, ileopsoas	146	Yes	Yes	Yes	No	Yes
Bruggers, 2007 ^[40]	1	M	18	R parietal lobe	Oligodendrogli oma →Anaplastic oligodendrogli oma	lung, pleura	32	Yes	Yes	Yes	NA	Yes

Zustovich, 2008 ^[41]	1	M	40	R parieto- occipital	Anaplastic oligodendrogli oma	Bone, liver	5	Yes	Yes	No	No	No
Fourtassi, 2008 ^[42]	1	M	56	R frontal lobe	Oligodendrogli oma	Bone marrow	3	Yes	Yes	Yes	NA	NA
Volavsek, 2009 ^[43]	1	F	55	R parieto- occipital region	Anaplastic oligodendrogli oma	Cervical lymphnodes, bone, retroperitoneum	12	Yes	Yes	No	No	No
Volavsek, 2009 ^[43]	2	F	32	L frontal lobe	Anaplastic oligoastrocyto ma	Bone,	58	Yes	Yes	Yes	No	Yes
Noshita, 2010 ^[44]	1	M	55	L frontal lobe	Anaplastic oligodendrogli oma	Bone, cervical lymphnodes, thymus, chest wall	24	Yes	Yes	No	No	No
Kural, 2010 ^[45]	1	M	56	R temporal lobe	Anaplastic oligodendrogli oma	Bone	11	Yes	Yes	No	NA	Yes

Krijnen, 2010 ^[46]	1	M	59	NA	Anaplastic oligodendroglioma	Bone marrow	31	Yes	NA	No	NA	Yes
Krijnen, 2010 ^[46]	2	M	72	NA	Anaplastic oligodendroglioma	Bone marrow	6	NA	NA	NA	NA	NA
Krijnen, 2010 ^[46]	3	M	35	NA	Anaplastic oligodendroglioma	Cervical lymphnodes, ileopsoas	13	NA	NA	NA	NA	NA
Krijnen, 2010 ^[46]	4	M	64	NA	Anaplastic oligodendroglioma	Retroperitoneal lymphnodes	21	NA	NA	NA	NA	NA
Krijnen, 2010 ^[46]	5	F	70	NA	Oligodendroglioma	Bone marrow	29	NA	NA	NA	NA	NA
Krijnen, 2010 ^[46]	6	M	67	NA	Anaplastic oligodendroglioma	Axillary lymphnodes	34	NA	NA	NA	NA	NA
Krijnen, 2010 ^[46]	7	M	31	NA	Oligodendroglioma	Bone marrow	84	NA	NA	NA	NA	NA

Krijnen, 2010 ^[46]	8	M	NA	NA	Oligodendroglioma	Bone	NA	NA	NA	NA	NA	NA
Wu, 2011 ^[47]	1	M	40	L temporo-parietal region	Anaplastic oligodendroglioma	Bone marrow	37	Yes	Yes	No	No	No
Cordiano, 2011 ^[48]	1	M	45	L periocular gyrus	Anaplastic oligodendroglioma	Bone marrow	57	Yes	Yes	No	NA	No
Greene, 2012 ^[49]	1	M	69	L frontal lobe	Anaplastic oligodendroglioma	Bone	144	Yes	Yes	Yes	NA	Yes
Alacacioglu, 2012 ^[50]	1	M	65	Frontal lobe	Oligodendroglioma →Anaplastic oligodendroglioma	Cervical lymphnodes, breast	75	Yes	Yes	Yes	No	Yes
McLemore, 2012 ^[51]	1	F	37	R parieto-occipital	Oligoastrocytoma	Scalp	324	Yes	Yes	Yes	NA	Yes

					→Anaplastic oligodendrogli oma								
Can, 2012 ^[52]	1	F	45	R frontal lobe	Oligodendrogli oma	Cervical lymphnodes	60	Yes	Yes	No	No	Yes	
					→Anaplastic oligodendrogli oma								
Tanaka, 2013 ^[53]	1	F	74	NA	Anaplastic oligodendrogli oma	Bone marrow	204	Yes	Yes	No	NA	No	
Mazza, 2013 ^[54]	1	F	33	L frontal lobe	Anaplastic oligodendrogli oma	Bone, breast, axillalry lymphnodes	21	Yes	Yes	No	No	Yes	
Mazza, 2013 ^[54]	2	F	34	R parieto- occipital	Oligodendrogli oma	Bone, breasts	80	Yes	Yes	Yes	No	Yes	
					→Anaplastic oligodendrogli oma								

Taskapilog u, 2013 ^[55]	1	F	31	L frontal lobe	Anaplastic oligodendrogli oma →Secondary glioblastoma	Bone, cervical lymphnodes, parotid gland	17	Yes	Yes	Yes	0	Yes
Sha, 2014 ^[56]	1	M	49	Frontal lobe	Anaplastic oligodendrogli oma	Scalp, cervical lymphnode, parotid gland, and bone,	48	Yes	Yes	Yes	NA	Yes
Li, 2014 ^[57]	1	M	46	Occipital	Anaplastic oligodendrogli oma	Bone	13	Yes	Yes	Yes	NA	Yes
Jian, 2016 ^[58]	1	M	59	NA	Oligodendrogli oma	Bone marrow, chest wall	60	Yes	NA	NA	NA	No
Demeulen aere, 2016 ^[59]	1	F	49	R frontal lobe	Anaplastic oligodendrogli oma	Bone, bone marrow	180	Yes	Yes	Yes	NA	Yes
Liu, 2016 ^[60]	1	F	51	NA	Oligodendrogli oma	Bone marrow	36	Yes	No	Yes	NA	Yes

Lavrador, 2017 ^[61]	1	M	44	L frontal lobe	Anaplastic oligodendroglioma	Bone marrow	5	Yes	Yes	Yes	NA	No
Appleford, 2017 ^[62]	1	M	56	R frontal lobe	Anaplastic oligodendroglioma	Bone	144	Yes	NA	Yes	NA	Yes
Ambinder, 2017 ^[63]	1	M	28	L frontal lobe	Anaplastic oligoastrocytoma	Bone, liver, lung	2	Yes	NA	NA	No	Yes
Maloney, 2017 ^[64]	1	F	59	R parietal lobe	Anaplastic oligodendroglioma	Bone, retroperitoneum	192	Yes	Yes	Yes	NA	NA
Sequeira, 2018 ^[65]	1	M	58	NA	Anaplastic oligodendroglioma	Lung, pleura	34	Yes	No	No	No	No
Singh, 2018 ^[66]	1	M	60	R frontal lobe	Anaplastic oligodendroglioma	Bone marrow, liver, retroperitoneal lymphnodes	6	Yes	Yes	Yes	NA	No

Aydemir, 2018 ^[67]	1	M	63	R frontal lobe	Anaplastic oligodendrogli oma	Bone marrow, 48 bone, Psoas, lymphnodes (supraclavicular, retroperitoneal, parasternal)		Yes	Yes	No	No	No
Surboek, 2018 ^[68]	1	M	46	L fronto- parietal region	Oligoastrocyto ma →Oligodendro glioma	Bone, cervical 108 lymphnodes		Yes	Yes	Yes	NA	Yes
Wu, 2019 ^[69]	1	F	48	L frontal lobe	Anaplastic oligodendrogli oma	Scalp 72		Yes	Yes	No	No	No
Razis, 2019 ^[70]	1	M	53	NA	Oligodendrogli oma →Anaplastic oligodendrogli oma	Bone marrow 114		Yes	Yes	Yes	NA	Yes

Burgy, 2019 ^[71]	1	M	36	R temporo- parietal region	Anaplastic oligodendrogli oma	Bone, marrow	bone	29	Yes	Yes	Yes	No	Yes
Shimizu, 2020 ^[72]	1	F	36	R frontal lobe	Anaplastic oligodendrogli oma	Bone, marrow	bone	84	Yes	Yes	Yes	NA	Yes

Author	Ca se <i>n</i>	Sex	Age at Mtx	Primary tumour site	Diagnosis	Metastatic sites	Months before Mtx onset	Surg ery	RT	CH T	VA/ VP shunt	IntraCNS Mtx
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Metastatic Astrocytoma

Moghtade r, 1966 ^[73]	1	M	64	L temporal lobe	Grade II astrocytoma	Cervical lymphnodes, parotid gland, soft tissue of the cheek	6	Yes	Yes	No	No	No
Brust, 1968 ^[74]	1	M	20	Fourth ventricle	Astrocytoma	Bone, cervical lymphnodes,	7	Yes	Yes	No	Yes	Yes

						pleura, thoracic lymp nodes							
Colafrance schi1968 ^[75] l	1	F	59	NA	Glioma	Scalp	3		No	No	No	No	No
Eade, 1971 ^[6]	1	F	21	Spinal cord	Fibrillary astrocytoma	Bone	5		Yes	Yes	No	NA	Yes
Cooper, 1974 ^[76]	1	M	25	R frontal lobe	Mixed glioma (astrocytoma- ependymoma)	Bone, cervical lymph nodes, soft tissue	8		Yes	No	No	No	Yes
Cooper, 1974 ^[76]	2	F	59	R occipital lobe	Malignant astrocytoma	Bone, scalp, heart, lung, liver, adrenal gland, lymph nodes (peripancreatic)	7		Yes	No	Yes	No	No
Kretschme r, 1974 ^[77]	1	M	21	Cerebellum	Malignant astrocytoma	Bone, lymph nodes, lungs, pleura	30		Yes	Yes	No	NA	NA

Kepes, 1976 ^[78]	1	M	9	Cerebellum	Cellular astrocytoma	Scalp, soft tissues, cervical lymphnodes	17	Yes	Yes	No	Yes	Yes
Mosca, 1976 ^[79]	1	F	12	Pons	Malignant polymorphous astrocytoma	Lung, liver	0	No	No	No	Yes	Yes
Rubinstein , 1976 ^[80]	1	M	38	L parasagittal	Malignant astrocytoma	Bone marrow, abdominal lymph nodes, psoas	17	No	Yes	No	No	NA
Schuster, 1976 ^[10]	1	F	42	L temporal lobe	Anaplastic astrocytoma	Cervical lymphnodes, mediastinum, pleura	7	Yes	No	No	No	Yes
Schuster, 1976 ^[10]	2	M	46	R parietal lobe	Monstrocellular astrocytoma	Liver, lungs	9	Yes	Yes	No	No	Yes
Schuster, 1976 ^[10]	3	M	56	L frontal lobe	Anaplastic astrocytoma	Bones, cervical lymph nodes	14	Yes	Yes	No	No	Yes
Kawano, 1977 ^[81]	1	F	49	L fronto- parietal	Malignant astrocytoma	Bone, pharynx, soft tissues	0	No	No	No	No	No

Schatski, 1977 ^[82]	1	M	73	right frontal lobe	Astrocytoma (grade III)	Bone	191	Yes	Yes	No	No	Yes
Schröder, 1977 ^[19]	1	F	26	spinal cord	Pilocytic astrocytoma	Bone, lymph nodes, liver, pleura, kidney, lungs, retroperitoenal soft tissue,	276	Yes	Yes	No	No	Yes
Deck, 1978 ^[83]	1	F	70	L occipital region	Anaplastic astrocytoma	Bone, pleura, lungs	0	No	No	No	No	No
Liwnicz, 1979 ^[84]	1	M	53	R frontal lobe	Malignant astrocytoma	Bones	24	Yes	Yes	No	No	No
Pasquier, 1980 ^[85]	1	M	43	left parasagittal	Malignant astrocytoma	Scalp, right cervical lymphnodes	0	Yes	Yes	No	No	No
Choi, 1981 ^[86]	1	M	23	Fourth ventricle	Astrocytoma	Bone	0	Yes	Yes	Yes	na	No
Hoffman, 1981 ^[87]	1	M	8	left temporal lobe	Astocytoma, low grade	Scalp, cervical lymphnodes	48	Yes	Yes	No	na	No

Trigg, 1983 ^[88]	1	M	4	Optic chiasm	Pilocytic astrocytoma	Peritoneum	10	Yes	Yes	No	Yes	No
Campbell, 1984 ^[89]	1	M	4	left frontal	Astrocytoma, low grade	Scalp	0	Yes	Yes	Yes	No	No
Campbell, 1984 ^[89]	2	M	8	Left temporal lobe	Astrocytoma, low grade	Scalp, cervical lymph nodes	48	Yes	Yes	No	NA	No
Kepes, 1984 ^[90]	1	M	33	Brainstem	Astrocytoma	Soft tissues	17	No	Yes	No	Yes	Yes
Dewar, 1985 ^[91]	1	F	36	L intracranial	Anaplastic astrocytoma	Bone, bone marrow	7	Yes	Yes	No	No	Yes
Dewar, 1985 ^[91]	2	F	44	L parieto- temporal	Anaplastic astrocytoma	Scalp	6	Yes	Yes	No	No	No
Steinberg, 1985 ^[92]	1	M	27	Cerebellum	Juvenile pontine astrocytoma	Peritoneum	252	Yes	Yes	No	Yes	Yes
Wakabaya shi, 1985 ^[93]	1	M	NA	L temporal lobe	Malignant astrocytoma	peritoneum	NA	Yes	Yes	Yes	Yes	Yes

Kingston, 1986 ^[94]	1	M	13	L parietal lobe	Differentiated astrocytoma grade II	Bone	3	Yes	Yes	No	Yes	Yes
Friedman, 1987 ^[95]	1	M	62	L frontal lobe	Grade III astrocytoma	Bone, bone marrow	24	Yes	Yes	Yes	NA	Yes
Kawasaki, 1987 ^[96]	1	F	82	L temporal lobe	Malignant astrocytoma	Liver, lung, bone marrow	NA	No	Yes	No	NA	No
Kepes, 1987 ^[97]	1	M	5	Pons	Low grade astrocytoma	Lung, pleura, muscle, peritoneum, cevic lymph nodes	14	No	Yes	No	No	No
Nishio, 1988 ^[98]	1	M	5	Optic chiasm	Pilocytic astrocytoma	Peritoneum	60	NA	Yes	No	Yes	Yes
Megele, 1989 ^[98]	1	M	67	L temporal lobe	Astrocytoma, grade III	L parotid and cervical lymph nodes	9	Yes	Yes	No	No	No
Jimenez- Jimenez, 1991 ^[100]	1	F	5	L pontomesenc	Astrocytoma	Peritoneum	12	No	Yes	No	Yes	Yes

				cephalic region										
Longee, 1991 ^[101]	1	M	13	R thalamus	Pilocytic astrocytoma	Bone	9	No	Yes	No	Yes	Yes		
Longee, 1991 ^[101]	2	F	9	Brainstem	Well differentiated astrocytoma	Bone	1	Yes	No	No	No	No		
Sunita, 1991 ^[102]	1	M	19	Brainstem	Grade II astrocitoma	Cervical lymph nodes	12	Yes	Yes	No	Yes	Yes		
Declercq, 1992 ^[103]	1	N A	26	Third ventricle	Astrocytoma, grade III	Peritoneum, lymph nodes	15	Yes	Yes	No	Yes	No		
Mimata, 1993 ^[104]	1	F	45	R temporal lobe	Anaplastic astrocytoma	Soft tissues	0	No	No	No	No	No		
Pollack, 1994 ^[105]	1	F	0	Suprasellar cistern and Posterior fossa	Pilocytic astrocytoma	Peritoneum	2	Yes	No	No	Yes	Yes		
Dubè, 1996 ^[106]	1	M	46	Spinal cord and L temporal lobe	Malignant astrocytoma	Bone, paravertebral lymph node	0	No	No	No	No	Yes		

Yanagawa , 1996 ^[107]	1	M	13	NA		Low grade fibrillary astrocytoma	Bone, bone marrow	10		Yes	Yes	Yes	No	Yes
Raut, 2002 ^[108]	1	M	49	L	Sylvian fissure	Astrocytoma	L parotid gland	48		Yes	Yes	No	No	Yes
Ueda, 2002 ^[109]	1	M	48	L	temporal lobe	Grade II astrocytoma	Bone, lungs, epicardium right kidney, pancreas, liver, lymph nodes	72		Yes	Yes	No	No	Yes
Tuominen , 2005 ^[110]	1	M	26	R	fronto-parietal	Anaplastic astrocytoma	Mediastinum	68		Yes	Yes	No	No	Yes
Pamucka, 2006 ^[111]	1	F	30	R	temporal lobe	Fibrillary astrocytoma partly gemistocytic, partly anaplastic	Bone, pharynx, soft tissue	6		Yes	Yes	Yes	No	No
Arulrajah, 2008 ^[112]	1	F	16	Spinal		Pilomyxoid astrocytoma	Peritoneum, small pelvis	33		NA	Yes	Yes	Yes	Yes

Zhen, 2009 ^[113]	1	M	26	R parieto-frontal region	Astrocytoma, grade II	Bone, cervical lymph nodes	14	Yes	Yes	No	No	Yes
Park, 2011 ^[114]	1	M	50	Spinal cord	Anaplastic astrocytoma	Bone	0	No	No	No	No	No
de Kunder, 2012 ^[115]	1	M	51	Frontal lobe	Low grade astrocytoma	Bone, cervical lymph nodes	204	NA	NA	NA	NA	NA
Blume, 2013 ^[116]	1	M	40	R hemisphere	Grade II astrocytoma	Bone, lung, pulmonary lymph nodes, muscles	60	Yes	Yes	No	No	Yes
Martens, 2013 ^[117]	1	M	29	L frontal lobe	Anaplastic astrocytoma	Bone	12	Yes	Yes	No	NA	No
Senerchia, 2013 ^[118]	1	F	15	Spinal	Pilocytic astrocytoma	Lung, liver	168	Yes	No	Yes	No	No
Barajas, 2015 ^[119]	1	F	7	Pons	Anaplastic astrocytoma	Peritoneum	23	Yes	Yes	Yes	Yes	No
Demirkaya, 2016 ^[120]	1	F	6	Third ventricle	Pilocytic astrocytoma	Bone	13	Yes	Yes	Yes	Yes	Yes

Lei, 2016 ^[121]	1	M	37	R temporal lobe	Grade II astrocytoma	Bone	30	Yes	Yes	Yes	No	Yes
Trivedi, 2016 ^[122]	1	M	50	R parieto-temporal region	Anaplastic astrocytoma	Bone	18	Yes	NA	NA	NA	No
Li, 2017 ^[123]	1	F	26	L trigone of the lateral ventricle	Anaplastic astrocytoma	Bone	12	Yes	Yes	Yes	NA	Yes
Coleman, 2018 ^[124]	1	F	10	Pons, spinal cord	Diffuse intrinsic pontine glioma	Lungs, kidneys, liver, fallopian tube, soft tissues, diaphragm	38	No	Yes	Yes	Yes	Yes
Granados, 2018 ^[125]	1	F	18	R basal ganglia/thalamus	Astocytoma, low grade	Peritoneal	36	Yes	Yes	No	Yes	No
Konar, 2018 ^[126]	1	F	48	Midline/Posterior fossa	Pilocytic astrocytoma	Bone	17	Yes	No	No	Yes	Yes
Pradhan, 2018 ^[127]	1	F	21	L fronto-parietal	Anaplastic pleomorphic	Spinal	36	Yes	Nv	Nv	Nv	Nv

						xantoastrocito								
						ma								
Bhatt, 2019 ^[128]	1	F	15	Fourth ventricle	Diffuse midline glioma	Bone, bone marrow	0		No	No	No	No	Yes	
Fonseca Rodriguez , 2020 ^[129]	1	M	33	L internal capsule- thalamus	Anaplastic astrocytoma	Bone, cervical lymphnodes,	19		No	Yes	Yes	NA	Yes	
Rossi, 2020 ^[130]	1	F	32	R frontal lobe	Grade II astrocytoma	Bone, cervical lymph nodes	38		Yes	Yes	Yes	No	Yes	

References

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