

Supplementary Table 1

Summary of case reports of orbital metastases from histologically confirmed breast cancers with early eye manifestations -Literature review-

First authors/s, year	Age	Sex	Early eye manifestation	Histology	IHC	Interval between primary diagnosis and orbital metastasis	Treatments	Outcomes	(Refs.)
Toller KK, et al, 1990	47	F	Bilateral orbital pain Decreased vision Binocular diplopia	LC	NA	8 years	Right anterior orbitotomy	Died after 9 months	6
Stuntz M, et al, 1998	40	M	Right eye pain Decreased visual activity Periorbital soft tissue swelling Severe right eye proptosis Corneal infection refractory to medical therapy	DC	NA	Initial manifestation	Radiation therapy Chemotherapy Hormonal therapy	Complete vision loss in the right eye Died after 3 years	7
Lell M, et al, 2004	63	F	Swelling of both eyelids Impaired eye movements	LC	CK7 (+)	Initial manifestation	Radical mastectomy	NS	8
Van der Zee J, et al, 2004	83	F	Tumor palpitation	LC	NA	1.5 years	Re-radiation Hyperthermia Surgery Hormonal therapy	Tumor regression Died 24 months after treatment	9
Solari HP, et al, 2006	81	F	Unilateral painless red eye Proptosis A nodule in the superior orbital rim	DC	ER(+)	2 years	Radiation therapy	NS	10

Supplementary Table 1 Continued

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Kadivar M, et al, 2006	53	F	Left orbital pain Mild proptosis	LC	ER(+)	Initial manifestation	NS	NS	11
Talwar V, et al, 2007	30	F	Protrusion of right eyeball Swelling around the right eye	DC	ER(+) PR(+)	1.5 years	Right lateral orbitotomy Radiation therapy Tamoxifen	No evidence of local recurrence	12
Surace D, et al, 2008	73	F	Left palpebral ptosis Diplopia An inability to close the eyelids Severe limitation of eye movement	LC	ER(+)	25 years	Hormonal therapy	Modest improvement	13
Gupta S, et al, 2011	46	F	Left orbital pain	LC	ER(+) PR(+) HER2(-)	Initial manifestation	Bilateral mastectomy Resection of left orbital mass Tamoxifen and leuprolide	Disease free	14
Tomizawa Y, et al, 2012	70	F	Worsening blurred vision Periorbital swelling Redness in the right eye	LC	ER(+) CK(+) HER2(-)	Initial manifestation	Hormonal therapy	NS	15
Patel MM, et al, 2013	47	F	Transient monocular vision loss	LC	ER(+) PR(-) HER2(-)	1.5 years	Radiation therapy Orbitotomy	NS	16

Supplementary Table 1 Continued

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Saffra N, et al, 2014	46	F	Diplopia Pain in the left eye	LC	ER(+) PR(+) HER2(-)	Initial manifestation	Tamoxifen and leuprolide Mastectomy	Complete resolution of the ocular symptoms	17
Gondim DD, et al, 2017	80	F	Diplopia	LC	ER(+) PR(-) CK7(+) CK20(-)	NS	NS	NS	18
Framarino-Dei-Malatesta M, et al, 2019	51	F	Diplopia Blurred vision Upper movement restriction of right eye	DC	ER(+) PR(+) HER2(-) Ki67 (35%)	7 years	Radiation therapy plus fulvestrant Chemotherapy (palbociclib) Anti-hormone based therapy	Failed to improve eye symptom	4
Present Case	50's	F	Foreign body sensation Exophthalmos	DC	ER(+) PR(+) Ki67 (26%) SYP(+) CK7(-) CK20(-)	Initial manifestation	Chemotherapy Nab-paclitaxel Letrozole and abemaciclib	Alive	

IHC: immunohistochemistry; NA: data not available; NS: not specified; LC: lobular carcinoma; DC: ductal carcinoma; ER: estrogen receptor; PR: progesterone receptor; HER2: human epidermal growth factor receptor 2; CK: cytokeratin