Iris metastasis secondary to prostate adenocarcinoma: A case report and literature review

Pauline Casselman, Nathalie Van Meer

ABSTRACT

Introduction: Despite prostate carcinoma being relatively frequent, iris metastases are extremely uncommon. Only a few cases of iris metastases secondary to prostate adenocarcinoma have been published so far.

Case Report: A 75-year-old patient with a four-year history of metastatic prostate adenocarcinoma (cT3NoM1, Gleason 9) presented with reduced vision in his right eye for two days. Slit lamp biomicroscopy revealed a voluminous amelanotic mass in the superotemporal iris. Given his poor general condition, the patient did not want further investigations or treatment. He died two weeks after diagnosis of the iris metastasis.

Conclusion: Iris metastases secondary to prostate cancer are rare. The patient usually complains of decreased or blurred vision. Ophthalmoscopy often reveals a yellowish-white or pink, nodular, vascularized mass. Fine-needle aspiration biopsy is recommended if the primary tumor is not yet known. The standard treatment is radiotherapy, although alternative therapies, such as hormonal therapy are described in literature. Nevertheless, iris metastases are usually associated with an advanced oncological disease and hence a limited life expectancy.

Keywords: Case report, Iris metastasis, Prostate adenocarcinoma, Radiation therapy

Introduction

Iris metastases from carcinomas are extremely rare. They represent between 7.8% and 9% of all uveal metastases, most of which are localized in the choroid (88–90%) [1, 2]. The most common tumors metastasizing to the iris include breast and lung carcinoma [3, 4]. Despite the frequent occurrence of prostate cancer in older men, these tumors rarely metastasize to the uvea.

We performed a comprehensive literature search of the medical databases Medline (PubMed), Embase, Web of Science, and Cochrane. The methodology of this literature review was written following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) statement (Figure 1). The search strategy is given in Appendix I. To identify potentially relevant articles, two reviewers (PC and NVM) screened all search results based on the title and abstract. Selected full-text articles were then reviewed for eligibility. A detailed overview of the inclusion and exclusion criteria is provided in Table 1. To avoid missing any relevant research, one reviewer (PC) performed snowballing, by which 10 additional articles were included.

In this article, we present the case of a 75-year-old man with a unilateral iris metastasis secondary to a prostate adenocarcinoma. Furthermore, we discuss the results of our comprehensive literature search on the epidemiology, clinical characteristics, diagnosis, treatment options, and prognosis of uveal metastases secondary to prostate adenocarcinoma.
A 75-year-old patient with a four-year history of metastatic prostate adenocarcinoma presented to the ophthalmology department with two days history of decreased visual acuity in his right eye. In November 2016, an elevated prostate-specific antigen (PSA) led to the diagnosis of a prostate neoplasm with secondary bone and lung metastases (TNM stage cT3N0M1). Biopsy showed a Gleason score of 7. Androgen deprivation therapy was initiated, namely bicalutamide and goserelin. Imaging in 2017 presumed progression of the pulmonary metastases. In January 2018, a transurethral resection of the prostate (TURP) was performed. Anatomopathological report described a poorly differentiated, invasive prostate adenocarcinoma with a Gleason score of 9 (4+5). Thereafter, bicalutamide was switched to abiraterone. One year later, abiraterone was replaced by taxotere weekly due to disease progression. Despite this, the patient’s metastatic prostate cancer progressed in December 2019 with progressive lung metastases, ascending PSA, lactate dehydrogenase (LDH), and alkaline phosphatase. Taxotere was replaced by cabazitaxel. Given further tumor progression under 2 cycles of cabazitaxel, enzalutamide therapy was proposed in February 2020.

Shortly thereafter, the patient presented to the ophthalmology department due to sudden visual decline for two days. Ophthalmological examination showed a best corrected visual acuity of 0.7 in his right eye and 0.9 in his left eye. Eye pressure (i.e., non-contact tonometry) was respectively 18 and 11.3 mmHg. Slit lamp biomicroscopy of his right eye revealed a voluminous, amelanotic mass in the superotemporal iris, with an (initially) attached blood clot and hyphema (Figure 2). Posterior pole and periphery showed no apparent abnormalities. Slit lamp biomicroscopy and fundoscopy of the other eye were unremarkable. No further investigations, such as an anterior segment optical coherence tomography (OCT) or ultrasound biomicroscopy, were carried out as these were not available at this clinic and the patient did not want further investigation. Prostate-specific antigen has risen to 610 μg/L. Given the patient’s history with known tumor progression, diagnosis of an iris metastasis in his right eye secondary to prostate carcinoma was made without need for fine-needle aspiration biopsy (FNAB).

Because of the deterioration of his general condition, the patient was not in favor of additional hospital visits and ocular therapy. The patient died two weeks after diagnosis of the ocular metastasis.

Figure 1: Flowchart of the systematic search and selection process following the Prisma statement.

Table 1: Detailed eligibility criteria for the literature review

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Exclusion criteria</th>
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<tbody>
<tr>
<td>Target population</td>
<td>Patients with prostate adenocarcinoma and uveal metastasis (choroid, iris, or ciliary body)</td>
</tr>
<tr>
<td>Types of study</td>
<td>Language other than English, French, or Spanish</td>
</tr>
</tbody>
</table>

CASE REPORT

In November 2016, an elevated prostate-specific antigen (PSA) led to the diagnosis of a prostate neoplasm with secondary bone and lung metastases (TNM stage cT3N0M1). Biopsy showed a Gleason score of 7. Androgen deprivation therapy was initiated, namely bicalutamide and goserelin. Imaging in 2017 presumed progression of the pulmonary metastases. In January 2018, a transurethral resection of the prostate (TURP) was performed. Anatomopathological report described a poorly differentiated, invasive prostate adenocarcinoma with a Gleason score of 9 (4+5). Thereafter, bicalutamide was switched to abiraterone. One year later, abiraterone was replaced by taxotere weekly due to disease progression. Despite this, the patient’s metastatic prostate cancer progressed in December 2019 with progressive lung metastases, ascending PSA, lactate dehydrogenase (LDH), and alkaline phosphatase. Taxotere was replaced by cabazitaxel. Given further tumor progression under 2 cycles of cabazitaxel, enzalutamide therapy was proposed in February 2020.

Shortly thereafter, the patient presented to the ophthalmology department due to sudden visual decline for two days. Ophthalmological examination showed a best corrected visual acuity of 0.7 in his right eye and 0.9 in his left eye. Eye pressure (i.e., non-contact tonometry) was respectively 18 and 11.3 mmHg. Slit lamp biomicroscopy of his right eye revealed a voluminous, amelanotic mass in the superotemporal iris, with an (initially) attached blood clot and hyphema (Figure 2). Posterior pole and periphery showed no apparent abnormalities. Slit lamp biomicroscopy and fundoscopy of the other eye were unremarkable. No further investigations, such as an anterior segment optical coherence tomography (OCT) or ultrasound biomicroscopy, were carried out as these were not available at this clinic and the patient did not want further investigation. Prostate-specific antigen has risen to 610 μg/L. Given the patient’s history with known tumor progression, diagnosis of an iris metastasis in his right eye secondary to prostate carcinoma was made without need for fine-needle aspiration biopsy (FNAB).

Because of the deterioration of his general condition, the patient was not in favor of additional hospital visits and ocular therapy. The patient died two weeks after diagnosis of the ocular metastasis.

Figure 2: Photograph of the anterior segment of the right eye with a tumor of the iris and hyphema.
DISCUSSION

Epidemiology

Uveal metastasis from prostate carcinoma is extremely rare. Reports indicate that less than 2% of uveal metastases are secondary to prostate adenocarcinoma [1, 2, 5].

Tumor cells can reach the uvea via two pathways. First, tumor cells can ascend into the carotids through the pulmonary circulation and aorta to reach the ophthalmic artery and ciliary vessels. Second, tumor cells can bypass the pulmonary circulation via the Batson venous plexus and subsequently reach the ophthalmic and vortex veins via the cranial venous sinuses [6–8].

Majority of the uveal metastases are located in the choroid, which can be explained by the vascular configuration of the uvea. Tumor cells mainly travel through the short posterior ciliary arteries supplying the choroid and less through the anterior or long posterior ciliary arteries vascularizing the anterior segment of the eye [9].

Table 2 provides an overview of described cases of prostate adenocarcinoma with uveal metastasis. To our knowledge, only fourteen cases of choroid metastasis, five cases of iris metastasis, two cases of both iris and choroidal metastasis, and one case with ciliary body metastasis secondary to prostate carcinoma have been reported so far.

Table 2: Characteristics of 21 patients with prostate adenocarcinoma and uveal metastasis

<table>
<thead>
<tr>
<th>Study</th>
<th>Age</th>
<th>Interval between prostate adenocarcinoma and uveal metastasis</th>
<th>Location</th>
<th>Complaint</th>
<th>Gleason score</th>
<th>Metastatic sites</th>
<th>Previous treatment</th>
<th>Treatment at time of uveal metastasis</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bouvier et al. (2018) [10]</td>
<td>84</td>
<td>NA</td>
<td>RE: iris</td>
<td>Decreased vision (1 month) Redness</td>
<td>7 (4 + 3)</td>
<td>No other sites</td>
<td>Hormonal therapy, injection every month (non-compliant for more than 6 months) EBRT (40 Gy, 20 fractions in one month) Resumption of hormonal therapy</td>
<td>Discontinued after 2 EBRT sessions due to pain. DWD 7 months later from cardiovascular complications.</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Age</td>
<td>Interval between prostate adenocarcinoma and uveal metastasis</td>
<td>Location</td>
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<td>Gleason score</td>
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<td>Outcome</td>
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<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Martin et al. (2015) [9]</td>
<td>66</td>
<td>9 months</td>
<td>LE: iris</td>
<td>Blurred vision, intraocular discomfort and redness</td>
<td>8 (3 + 5)</td>
<td>Bone, skin, and brain</td>
<td>Hormonal therapy</td>
<td>Radiation therapy (1.2-1.3 vertebrae 2 × 8 Gy and bladder 5 × 4 Gy)</td>
<td>Whole brain radiation, including iris lesion (30 Gy, 10 fractions)</td>
</tr>
<tr>
<td>Albadainah et al. (2015) [13]</td>
<td>62</td>
<td>Unclear, between 10–12 months</td>
<td>LE: choroid</td>
<td>Decreased vision</td>
<td>8 (4 + 4)</td>
<td>Bone</td>
<td>Hormonal therapy: -bicalutamide for 2 weeks (50 mg p.o. once daily) -1 IM injection of triptorelin (11.25 mg)</td>
<td>± 9 months after orchidectomy: -bicalutamide -EBRT (30 Gy, 10 fractions over 2 weeks)</td>
<td>Following completion of EBRT: CR of the choroidal lesion. 14 months following completion of EBRT: free of choroidal recurrence.</td>
</tr>
<tr>
<td>Ameri et al. (2012) [14]</td>
<td>71</td>
<td>7 years</td>
<td>LE: choroid</td>
<td>Decreased vision (3 months)</td>
<td>NA</td>
<td>Lymph nodes, bone, and lung</td>
<td>Radical prostatectomy</td>
<td>Radiotherapy</td>
<td>Leuprolide and flutamide</td>
</tr>
<tr>
<td>Walavalkar et al. (2012) [15]</td>
<td>70</td>
<td>8 years</td>
<td>LE: iris</td>
<td>Decreased vision</td>
<td>7 (3 + 4)</td>
<td>No other sites</td>
<td>Radiotherapy</td>
<td>Leuprolide and flutamide</td>
<td>Resistance. Complete loss of vision one year later, wherefore enucleation.</td>
</tr>
<tr>
<td>Sarenac et al. (2012) [16]</td>
<td>69</td>
<td>More than 5 years</td>
<td>RE: iris</td>
<td>Decreased vision, pain and watering (1 month)</td>
<td>8</td>
<td>Skin, lymph nodes</td>
<td>Hormonal therapy for 5 years</td>
<td>Resumption of hormonal therapy was suggested</td>
<td>Plaque-radiotherapy</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>LE: iris</td>
<td></td>
<td></td>
<td></td>
<td>Chemotherapy</td>
<td>Plaque-radiotherapy</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Age</td>
<td>Interval between prostate adenocarcinoma and uveal metastasis</td>
<td>Location</td>
<td>Complaint</td>
<td>Gleason score</td>
<td>Metastatic sites</td>
<td>Previous treatment</td>
<td>Treatment at time of uveal metastasis</td>
<td>Outcome</td>
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</tr>
<tr>
<td>Kancherla et al. (2011) [17]</td>
<td>68</td>
<td>Visual symptoms presented first</td>
<td>RE: choroid</td>
<td>Photopsia and decreased vision (4 months)</td>
<td>NA</td>
<td>No other sites</td>
<td>I-125 plaque radiotherapy (35 Gy)</td>
<td>1 year following treatment; almost CR and improvement in vision.</td>
<td></td>
</tr>
<tr>
<td>Ermion et al. (2011) [18]</td>
<td>60</td>
<td>5 years</td>
<td>RE: choroid</td>
<td>Decreased vision</td>
<td>9 (5 + 4)</td>
<td>Lymph nodes</td>
<td>Radical prostatectomy with lymphadenectomy</td>
<td>Hormonal therapy Zoledronic acid</td>
<td></td>
</tr>
<tr>
<td>Primavera et al. (2008) [19]</td>
<td>54</td>
<td>Visual symptoms presented first</td>
<td>RE: choroid</td>
<td>RE: no visual symptoms LE: decreased vision (1 month)</td>
<td>4</td>
<td>Bone and lungs</td>
<td>EBRT (30 Gy, 15 daily fractions, 2 Gy per fraction)</td>
<td>1 month after finishing EBRT: visual recovery (BCVA RE 20/20), 2 months after finishing EBRT: almost CR, 2.5 years after finishing EBRT: CR of choroidal lesion despite systemic progression of disease.</td>
<td></td>
</tr>
<tr>
<td>Connell et al. (2006) [22]</td>
<td>52</td>
<td>Visual symptoms presented first</td>
<td>RE: choroid</td>
<td>Decreased vision (1 week)</td>
<td>9</td>
<td>Lymph nodes and bone</td>
<td>Hormonal therapy Radiotherapy (bone, pelvis) EBRT (30 Gy, 10 fractions)</td>
<td>Regression of choroidal lesion and improvement of vision.</td>
<td></td>
</tr>
<tr>
<td>El-Zayaty et al. (2003) [23]</td>
<td>76</td>
<td>9 years</td>
<td>RE: ciliary body</td>
<td>RE: decreased vision and pain</td>
<td>7</td>
<td>Bone</td>
<td>Excision (iridocyclectomy) EBRT for residual eye tumor (4 weeks) and for new spinal cord metastasis</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>
Based on these cases, the mean age at diagnosis for uveal metastasis is 66 years (range: 49–84 years). The average interval between diagnosis of prostatic cancer and uveal metastasis is 39 months (range: 0–204 months). In our case, the interval was four years. In contrast to the rarity of uveal metastases from prostate cancer, orbital metastases are much more frequent due to their strong affinity for bone [28].

### Diagnosis

The diagnosis of iris metastasis is generally clinical. Patients usually complain of painless reduction of vision. Other frequently reported complaints include ocular redness and intraocular pain. It is sometimes an incidental finding, particularly in small tumors [11]. In our case, the patient had noticed a decrease in vision.

### Table 2: (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Age</th>
<th>Interval between prostate adenocarcinoma and uveal metastasis</th>
<th>Location</th>
<th>Complaint</th>
<th>Gleason score</th>
<th>Metastatic sites</th>
<th>Previous treatment</th>
<th>Treatment at time of uveal metastasis</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mayama et al. (2003) [24]</td>
<td>71</td>
<td>18 months</td>
<td>RE: iris</td>
<td>RE + LE: decreased vision and pain</td>
<td>NA</td>
<td>Bone</td>
<td>Hormonal therapy: -fosfestrol 300 mg per day -leuprorelin acetate 3.75 mg per day</td>
<td>EBRT (2 months, RE 50 Gy, LE 30 Gy)</td>
<td>Tumor regression. Decreased vision RE, improved vision LE. DWD 10 months after diagnosis.</td>
</tr>
<tr>
<td>Wieg et al. (1998) [26]</td>
<td>61</td>
<td>3 years</td>
<td>RE: choroid</td>
<td>Decreased vision</td>
<td>NA</td>
<td>Bone, liver, and lung</td>
<td>Bilateral orchietectomy Radiotherapy (bone)</td>
<td></td>
<td>Restoration of normal vision. After 3 weeks of androgen deprivation: 90% diminution of the left retinal mass. 12 months after therapy: no new complaints, PSA undetectable.</td>
</tr>
<tr>
<td>Keizur et al. (1995) [8]</td>
<td>65</td>
<td>At least 4 years</td>
<td>RE: choroid</td>
<td>RE: no visual symptoms LE: decreased vision</td>
<td>NA</td>
<td>Bone and lymph nodes</td>
<td>Lymphadenectomy Radical prostatectomy</td>
<td>Hormonal therapy -flutamide (250 mg TID) for 2 weeks -leuprorel acetate depot (7.5 mg, monthly injection)</td>
<td>Restoration of normal vision. After 12 months of follow-up: free of ocular recurrence.</td>
</tr>
<tr>
<td>Liu et al. (1992) [27]</td>
<td>69</td>
<td>4 years</td>
<td>LE: choroid and sclera</td>
<td>Decreased vision</td>
<td>NA</td>
<td>Bone</td>
<td>Bilateral orchietomy Hormonal therapy (flutamide) Radiotherapy to the left orbit</td>
<td>NA</td>
<td></td>
</tr>
<tr>
<td>Dieckert and Berger (1982) [6]</td>
<td>54</td>
<td>Visual symptoms presented first</td>
<td>LE: choroid</td>
<td>Decreased vision (4 months)</td>
<td>NA</td>
<td>Lungs and bone</td>
<td>Radiotherapy (bone) TURP Bilateral orchietomy Hormonal therapy: DES 3 mg per day</td>
<td>Restoration of normal vision after 4 weeks, CR after 2 months</td>
<td>Restoration of normal vision after 4 weeks, CR after 2 months</td>
</tr>
</tbody>
</table>

Iris metastasis often presents as a nodular, yellowish-brown, or orange-pink mass [4]. They can be multiple, but they are exceptionally bilateral. The iris mass is frequently neovascularized, which can cause hyphemas [3]. Inflammation is sometimes predominant, and the ophthalmologist may face a picture of granulomatous anterior pseudo-uveitis, also called “masquerade syndrome.”

One of the most common complications is secondary glaucoma, either by direct invasion of the angle or obstruction of the trabecular meshwork by tumor cells or inflammatory cells [3]. In our case, there was no ocular hypertension.

If a patient with an oncological history presents with a decrease in visual acuity, the differential diagnosis should always include a metastatic disease. However, a metastatic iris tumor can be the first presentation as well. Two studies of Shields et al. [1, 29] reported no history of a primary tumor in 33–34% of patients with uveal metastasis. To exclude a primary tumor, in particular uveal melanoma, FNAB is recommended. In a series of 100 biopsies of iris tumors conducted by Shields et al. [30], immediate hyphema was the only reported complication related to FNAB (34%), which persisted after two weeks in only 6% of cases. Further systemic workup depends on the anatomopathological findings. In our case, biopsy was deferred due to a convincing clinical presentation and the patient’s preference.

Treatment

As iris metastases are usually associated with a palliative setting, the main treatment goals are preservation and, if possible, improvement of vision in addition to palliative pain control. The treatment options discussed below relate to uveal metastases. Several strategies have been described in the literature, with radiotherapy and hormonal therapy being the most frequently reported.

Given the radiosensitive nature of these tumors, radiotherapy is the recommended treatment for uveal metastasis [31]. Radiation can be delivered externally (external-beam radiation therapy (EBRT)) with photon, electron, or proton beams or through episcleral plaque brachytherapy.

External-beam radiation therapy is considered an effective and generally well-tolerated treatment option for the management of sight-threatening uveal metastases. Doses range from 30 to 40 Gy and are delivered by fractionation. Studies including patients with choroidal metastasis report visual stabilization or improvement in 62–85% of cases [32, 33]. Patients with pre-EBRT vision ≥20/60, age <55 years, white race, and tumor base diameter less than 15 mm are most likely to benefit [34]. It should be noted that these studies included patients with choroidal and not iris metastases and the metastases were secondary to a prostate carcinoma in only very few patients. In our literature study, we found seven case reports with an iris metastasis secondary to a prostate carcinoma, of which two with a choroidal metastasis in the other eye. Radiotherapy was part of the treatment in all cases. Tumor regression was reported in three studies. However, only one patient showed stable disease at nine months of follow-up, five patients died with disease, and one was lost to follow-up.

Ocular irradiation can be accompanied with some complications. Acute side-effects include ocular and skin erythema, conjunctivitis, keratitis, iritis, and radiation blepharopathy [10, 31, 35]. Given the poor prognosis, long-term sequelae are rare and include dry eye, cataract, radiation retinopathy, radiation optic neuropathy, neovascularization of the iris, and second malignancy [13, 36]. Overall, radiation therapy is a safe and efficient treatment, leading to the preservation or improvement of vision and improved quality of life in patients who often have a poor prognosis.

Shields et al. [37] described plaque brachytherapy as an effective method for EBRT refractive cases with a solitary uveal metastasis not adjacent to the fovea or optic nerve. Benefits include shorter administration time and precise radiation delivery [38].

Another treatment option described is transpupillary thermotherapy (TTT). Heat is delivered transpupillary to the retinal pigment epithelium and choroid with a diode laser [31]. It is mainly used in the treatment of choroidal hemangiomas and melanomas. Similarly, it can be an option for the treatment of small, solitary choroidal metastases with a thickness less than 3.5 mm [39]. Notably, treatment adjacent to the fovea or optic nerve is not recommended due to its permanent impact on visual acuity.

Hormonal therapy, including antiandrogens and luteinizing hormone releasing hormone (LHRH) agonists, may also be an effective treatment strategy for patients whose disease is not yet castration resistant. To our knowledge, five cases of choroidal metastasis secondary to prostate cancer have been reported in which successfully treatment with hormonal monotherapy had been achieved [6, 8, 14, 19, 21]. Hormonal therapy was part of the treatment in six of seven patients with an iris metastasis. Since this was always in combination with radiotherapy, it is difficult to draw conclusions regarding its effectiveness [9–11, 15–17].

To summarize, treatment selection in patients with an iris metastasis secondary to prostate cancer is based on the availability of EBRT, the hormonal status of the disease, and cost. For a hormone-sensitive tumor, either EBRT or an antiandrogen with or without LHRH agonist is recommended. For patients with disease progression under hormonal therapy, however, EBRT is the only effective therapeutic option.

Prognosis

The prognosis for patients with uveal metastasis is generally poor. According to various series, the overall
median survival rate from the time of ocular diagnosis varies between 6 and 10.5 months [5, 9]. In our case, this was only two weeks. In 19 out of 21 cases, there were other distant metastases at the time of diagnosis, which was also the case in our patient.

CONCLUSION

The iris is a very rare site of metastasis in prostate cancer. Painless visual decline and characteristic ophthalmological findings in a patient with a history of prostate carcinoma strongly suggest a mass originating from the prostate. A multidisciplinary approach is essential to address both the primary tumor and the metastases. Radiation therapy is currently the standard care treatment for restoring visual acuity either with EBRT or brachytherapy. Due to the aggressiveness of the global pathology, the prognosis is generally poor.

REFERENCES


**********

Author Contributions

Pauline Casselman – Conception of the work, Design of the work, Analysis of data, Interpretation of data, Drafting the work, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Nathalie Van Meer – Acquisition of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission
The corresponding author is the guarantor of submission.

Source of Support
None.

Consent Statement
Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest
Authors declare no conflict of interest.

Data Availability
All relevant data are within the paper and its Supporting Information files.

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SEARCH STRATEGY

PubMed
Concept 1: uveal neoplasms
Concept 2: prostate neoplasms

Embase
Concept 1: uveal neoplasms
‘uvea tumor’/exp OR ‘uvea tumor’/ti,ab,kw OR ‘uvea’/ti,ab,kw OR ‘uveal tract’/ti,ab,kw OR Ophthalmology, Vol. 4, 2021
Web of Science

Concept 1: uveal neoplasms
"uveal neoplasm*" OR "iris neoplasm*" OR "uvea" OR "uveal" OR "iris" OR "choroid*" OR
"choroidal neoplasm*" OR "uvea tumor*" OR "uveal tumor*" OR "uveal tract" OR "choroidal
neoplasm*" OR "iris neoplasm*" OR "choroid tumor*" OR "choroidal tumor*" OR
"intraocular tumor*"

Concept 2: prostate neoplasms
"Prostatic Neoplasms" OR "Prostatic Neoplas*" OR "Prostate Neoplas*" OR "Prostatic Neoplas*"
OR "Prostate Cancer*" OR "Prostatic Cancer*" OR "Cancer of the Prostate" OR "Cancer of Prostate"
OR "prostate tumor*" OR "prostatic tumor*" OR "Prostate carcinoma*" OR "prostatic carcinoma*"
OR "prostatic adenocarcinoma*" OR "prostate gland tumor*" OR (("Neoplasm Metastasis" OR metastas*)
AND prostate*) OR (prostate gland AND (tumor* OR tumour*))

Cochrane

#1: [mh “Uveal Neoplasms”]
#2: ((Uveal NEXT Neoplas*) OR uvea OR uveal OR iris OR choroid* OR (uvea NEXT tumor*) OR
(uveal NEXT tumor*) OR "uveal tract" OR (choroidal NEXT neoplas*) OR (choroid NEXT
neoplas*) OR (iris NEXT Neoplas*) OR (choroid NEXT
tumor*) OR (choroidal NEXT tumor*) OR
(intraocular NEXT tumor*)):ti,ab,kw
#3: #1 OR #2
#4: [mh “Prostatic Neoplasms”]
#5: ((Prostatic NEXT Neoplas*) OR (Prostate NEXT Neoplas*)
OR (prostate NEXT Cancer*) OR
(Prostatic NEXT Cancer*) OR “Cancer of the Prostate” OR “Cancer of Prostate” OR
prostate NEXT tumor*) OR (prostatic NEXT tumor*) OR (prostate NEXT carcinoma*) OR
(prostatic NEXT carcinoma*) OR (prostate NEXT adenocarcinoma*) OR
(prostatic NEXT adenocarcinoma*) OR
(prostate NEXT gland NEXT tumor*) OR (("Neoplasm Metastasis" OR metastas*) AND prostate*)
OR ("prostate gland" AND tumor*)

#6: #4 OR #5
#7: #3 AND #6