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Case Report

Recurrence of Pancreatic Cancer Presenting as Choroidal Metastasis: A Case Report

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Keywords
Pancreatic cancer · Choroidal metastasis · Uveal metastasis

Abstract
A patient initially diagnosed as having central serous chorioretinopathy (CSC) presented to a clinic with recurrence of pancreatic cancer manifesting as choroidal metastasis. He was initially diagnosed with CSC by a local ophthalmologist 8 weeks earlier and subsequently presented to our clinic for second opinion after further loss of vision. His medical history was significant for locally advanced pancreatic cancer that was resected by pancreaticoduodenectomy and was treated with adjuvant Folfirinox chemotherapy that was completed 12 months earlier. On examination, there was a large serous retinal detachment overlying a large pale ill-defined elevated choroidal lesion. A diagnosis of choroidal metastasis from recurrence of his pancreatic cancer was made. The diagnosis of choroidal metastasis of his pancreatic cancer represented recurrence of his pancreatic cancer that is associated with high mortality. Early recognition by clinical assessment may allow timely management with chemotherapy and radiation, and potentially prolong survival.

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Introduction

A 45-year-old male patient was believed to be in remission from pancreatic cancer after having surgical resection for locally advanced disease 2 years earlier. He was recently diagnosed as having central serous chorioretinopathy (CSC) by a local ophthalmologist 8 weeks earlier due to the presence of subretinal fluid and best-corrected visual acuity of 6/18.

Case Presentation

He presented to our clinic with significantly worsening vision and had described a superior visual field scotoma that gradually involved his central vision. He had no previous ophthalmic history; however, his medical history was significant for locally advanced pancreatic cancer that was believed to be in remission. He initially presented 2 years earlier with obstructed jaundice and underwent pancreaticoduodenectomy and resection of a large pancreatic head mass along with some local lymph nodes. The tumor was consistent with a pancreatic adenocarcinoma that measured 47 mm in diameter with clear margins, and the patient had tumor staging T3N2M0. He was then treated with 12 cycles of adjuvant combined-chemotherapy Folfirinox regime (leucovorin calcium, fluorouracil, irinotecan hydrocholoride, and oxaliplatin) that was completed in May 2019. He was regularly monitored with serum carbohydrate antigen 19-9 levels and computed tomography abdominal scans. He was believed to be in remission since completing his course of adjuvant chemotherapy.

On examination, his best-corrected visual acuity was count fingers 50 cm in his right eye and 6/7.5 in the left eye. There were no cells or flare in the anterior chamber or vitreous. His right fundus examination revealed large areas of serous retinal detachment with protein exudate, overlying irregularly elevated ill-defined pale choroidal lesions at the posterior pole (Fig. 1). Optical coherence tomography demonstrated areas of subretinal fluid with hyper-reflective material. There were choroidal undulations and diffuse areas of hyper-reflectivity in the choroid. B-scan ultrasound scans revealed echodense lesions at the posterior pole. Fundus autofluorescence (FAF) imaging revealed areas of stippled hyper- and hypo-autofluorescent changes.

The patient was diagnosed with choroidal metastasis from his recurrence of pancreatic cancer and was immediately admitted for systemic workup by the medical oncologists. He was found to have progressive mediastinal lymphadenopathy and liver metastases with carbohydrate antigen 19-9 level markedly elevated above 28,000 U/mL. The patient subsequently underwent 5 fractions of local radiation, which resulted in good local tumor control 10 months posttreatment. This was seen by reduced tumor size, choroidal and retinal pigment epithelium atrophy, and resolution of serous retinal detachment (Fig. 2). There was no improvement of his vision, which remained at count fingers 50 cm. He underwent further systemic treatment with next-generation sequencing which has current control of his metastatic disease.

Discussion

Pancreatic cancer carries an extremely poor prognosis, having one of the lowest survival rates of all cancers and a 5-year survival rate of only 10% [1]. If the diagnosis is made early when there is localized disease, the 5-year survival rate is 39%; in contrast, the 5-year survival

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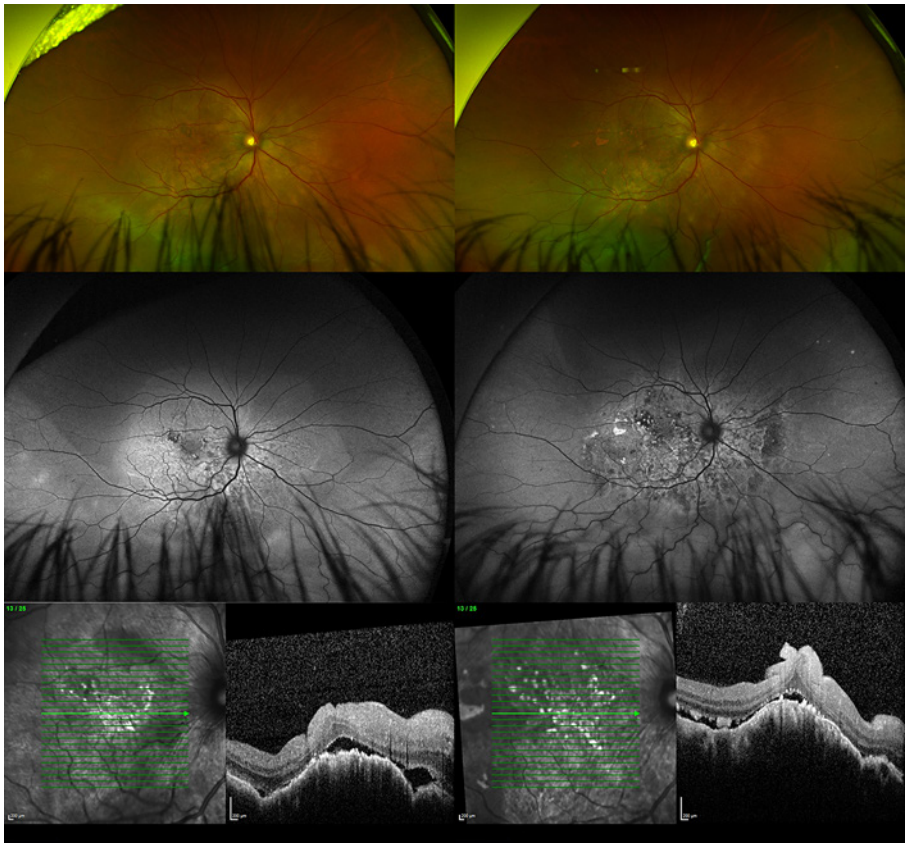

Fig. 1. Multimodal imaging of the right eye. Top: Wide-field pseudo-color imaging, middle: FAF, bottom: OCT. Left-side images demonstrate patient findings on presentation with ill-defined pale choroidal lesions at the posterior pole with a large inferior serous retinal detachment. FAF imaging demonstrates areas of hyperautofluorescence in response to the serous retinal detachments. OCT horizontal raster reveals large choroidal undulations with subretinal fluid. Right side reveals findings after 2 fractions of local radiation treatment, with wide-field imaging demonstrating pigmentary changes with reduction in inferior serous retinal detachment and hypofluorescent areas indicating early retinal pigment epithelial atrophy. FAF, fundus autofluorescence; OCT, optical coherence tomography.

rate for stage IV or metastatic disease is only 3% [2]. Choroidal metastasis from pancreatic cancer is exceedingly rare. In a large series of 2,214 tumors of 1,111 patients with uveal metastases, only 8 (1%) were due to pancreatic cancer [3]. These patients had the worst prognosis of all tumors with a 5-year survival of 23%. Due to the well-recognized difficulties in detecting the primary cancer, 3 of these patients (37%) had their ocular findings prior to detection of their systemic cancer [3]. From a PubMed search using "pancreas," "cancer," "metastasis," "choroid," "uvea," "eye," and "ocular," there were only 6 other cases identified in the literature.

There are sparse reports in the literature of patients of uveal metastasis initially diagnosed as CSC. These have been mainly due to metastatic cutaneous melanoma [4, 5]. Furthermore, patients presenting with MEK-inhibitor-associated retinopathy have been similarly thought to have CSC [6].

Typical features of CSC that may differentiate from choroidal metastasis include the presence of pachychoroid features with pigment epithelial defects underlying a serous retinal detachment, retinal pigmentary changes corresponding to gravitational tracks on FAF imaging, or typical fluorescein leakage patterns of CSC. It is imperative that in patients with

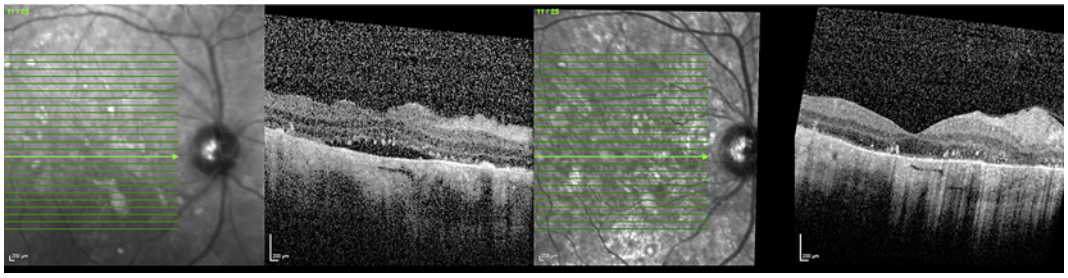

Fig. 2. Gradual regression of subfoveal fluid following 5 fractions of local radiation (left) and 6 months post-treatment (right).

any history or suspicion of malignancy, detailed assessment for choroidal lesions with EDI-optical coherence tomography is required. Such features include hypo- or hyper-reflective choroidal lesions, posterior shadowing, irregular "lumpy bumpy" choroidal elevations, thinning of the overlying choriocapillaris, shaggy or elongated photoreceptors, and high-reflective speckles in the subretinal fluid [7, 8]. In the presence of significant media opacity and indeterminate findings on B-scan ultrasound, magnetic resonance imaging with gadolinium contrast may be useful to detect choroidal metastases.

It is important to recognize uveal metastasis as an important cause of subretinal fluid in patients diagnosed with pancreatic cancer as this may signify disease relapse, thus considerably altering the patient's management and survival probability. Conditional survival is defined as survival probability in a subgroup of patients, such as those who have had pancreatic tumor resection, who may survive a predefined period. A recent population-based study of 3,082 patients from the Netherlands assessed the survival probability increased for each year already survived relative to total survival time. The 5-year survival rate after resection increased from 15% straight after surgery to 23%, 42%, 61%, and 82% for each additional year survived (i.e., 1, 2, 3, and 4 years survived after tumor resection, respectively) [9]. A similar study of 1,005 patients found that 1-year conditional survival probability for disease-free patients at 2 years after pancreatectomy, similar to our patient's case, was 96% compared to only 45% for those with disease recurrence at 2 years [10]. In addition to these findings, disease recurrence is often found late where common sites of distant metastasis, such as the liver or lungs, are often asymptomatic or difficult to detect. Therefore, it is imperative that ophthalmologists make the clinical diagnosis of choroidal metastasis as relapse of pancreatic cancer signifies a major change in the patient's treatment and survival probability.

Statement of Ethics

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. This study protocol was reviewed and the need for approval was waived by the Royal Victorian Eye and Ear Hospital Human Research Ethics Committee.

Conflict of Interest Statement

The authors declare that they have no competing interests.

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Author Contributions

Both authors attest that they meet the current ICMJE criteria for authorship. Both authors, E.S. and T.T., equally contributed in writing the manuscript, performing the literature search, and formatting images. Both authors have approved the final version of the manuscript.

Data Availability Statement

The authors confirm that all relevant data are included in the article.

References

1 Siegel RL, Miller KD, Jemal A, Jemal A. Cancer statistics, 2017. CA Cancer J Clin. 2021;67(1):7–30.
2 Li X, Liu Z, Ye Z, Gou S, Wang C. Impact of age on survival of patients with pancreatic cancer after surgery: analysis of SEER data. Pancreatology. 2018;18(1):133–8.
3 Shields CL, Welch RJ, Malik K, Acaba-Berrocal LA, Selzer EB, Newman JH, et al. Uveal metastasis: clinical features and survival outcome of 2,214 tumors in 1,111 patients based on primary tumor origin. Middle East Afr J Ophthalmol. 2018;25(2):81–90.
4 Grajewski RS, Schuler-Thurner B, Mauch C, Kreuzberg N, Koch KR, Bergua A, et al. Ocular diseases in metastatic cutaneous melanoma: review of 108 consecutive patients in two German tertiary centers. Graefes Arch Clin Exp Ophthalmol. 2014;252(4):679–85.
5 Daitch Z, Shields CL, Say EA, Mashayekhi A, Shields JA. Submillimeter choroidal melanoma detection by enhanced depth imaging optical coherence tomography in a patient with oculodermal melanocytosis. Retin Cases Brief Rep. 2016;10(1):6–10.
6 Urner-Bloch U, Urner M, Stieger P, Galliker N, Winterton N, Zubel A, et al. Transient MEK inhibitor-associated retinopathy in metastatic melanoma. Ann Oncol. 2014;25(7):1437–41.
7 Demirci H, Cullen A, Sundstrom JM. Enhanced depth imaging optical coherence tomography of choroidal metastasis. Retina. 2014;34(7):1354–9.
8 Shields CL, Manalac J, Das C, Saktanasate J, Shields JA. Review of spectral domain enhanced depth imaging optical coherence tomography of tumors of the choroid. Indian J Ophthalmol. 2015;63(2):117–21.
9 Latenstein AEJ, van Roessel S, van der Geest LGM, Bonsing BA, Dejong CHC, Groot Koerkamp B, et al. Conditional survival after resection for pancreatic cancer: A Population-Based Study and prediction model. Ann Surg Oncol. 2020;27(7):2516–24.
10 Malleo G, Maggino L, Ferrone CR, Marchegiani G, Warshaw AL, Lillemoe KD, et al. Reappraising the concept of conditional survival after pancreatectomy for ductal adenocarcinoma: a bi-institutional analysis. Ann Surg. 2020;271(6):1148–55.