

Night blindness due to vitamin A deficiency associated with resected adenocarcinoma of the pancreas

Andreas Kontos¹, Hamzeh Kayhanian², Fatima El-Khouly², Roopinder Gillmore²

¹Department of Ophthalmology, Royal Free Hospital, London NW3 2QG, UK

²Department of Oncology, Royal Free Hospital, London NW3 2QG, UK

Correspondence to: Andreas Kontos. Department of Ophthalmology, Royal Free Hospital, London NW3 2QG, UK. akontos@doctors.org.uk

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Dear Sir,

We write to present a rare case of night blindness caused by vitamin A deficiency secondary to resected adenocarcinoma of the pancreas. To our knowledge this is the first reported case of this association.

A 62 year-old man presented to the eye clinic with a 12mo history of worsening nyctalopia and colour perception.

Three and a half years previously, he underwent a Whipple's procedure and chemotherapy for pancreatic adenocarcinoma. Two years later he was diagnosed with local recurrence which was treated with chemotherapy and radiotherapy. At the time of presentation to the eye clinic, he was being investigated for a possible new local recurrence.

On examination his best corrected visual acuities (BCVA) were 6/9 both eyes. He scored 3/17 Right and 5/17 Left on the Ishihara chart. There were no Bitot spots or other signs of xerophthalmia. He had clear media and normal intraocular pressures. Fundus examination was unremarkable.

Humphrey automated perimetry was full with good reliability indices and optical coherence tomography of the maculae was normal. Magnetic resonance imaging of the brain and orbits was within normal limits. Laboratory investigations showed profoundly reduced serum vitamin A level at 0.03 $\mu\text{mol/L}$ (normal range 1.05 to 2.80 $\mu\text{mol/L}$). Electroretinography (ERG) showed undetectable pattern and

focal ERGs bilaterally, and S-cone ERGs of reduced amplitude on the right and undetectable on the left, whilst bright flash ERG a-waves were markedly reduced in amplitude and electronegative bilaterally. Dim flash rod ERGs were undetectable bilaterally. Photopic 30 Hz flicker was of borderline timing and normal amplitude, and single flash cone ERGs were normal. These findings represented severe generalised rod system dysfunction, consistent with vitamin A deficiency. In addition, this patient demonstrated macular dysfunction and S-cone ERG abnormalities as previously reported in some cases of vitamin A deficiency^[1].

The patient received vitamin A intramuscular (IM) injections 100 000 U daily for 3d followed by 50 000 U daily for 2wk and subsequently was started on long-term oral supplementation. On follow up 3mo later, he was asymptomatic, with BCVA 6/6-1 and 16/17 plates read on the Ishihara chart in both eyes. Vitamin A level was 0.45 $\mu\text{mol/L}$. He reported that the improvement in his symptoms was dramatic and occurred in the first 3d of treatment, in a similar fashion to previously described recovery following vitamin A supplementation^[1]. The patient refused further electrodiagnostics to confirm resolution. Due to the impressive resolution of the symptoms with vitamin A supplementation and the corroborative ERG findings, it was not considered necessary to investigate further to rule out a paraneoplastic retinopathy. In addition, to our knowledge there has been no report of this in association with pancreatic adenocarcinoma.

There are various reports in the literature of vitamin A deficiency-related nyctalopia secondary to malabsorption. These have been related among others to bowel resections for the management of Crohn's disease^[1-3], bariatric surgery^[4,5], primary biliary cirrhosis^[2] and cystic fibrosis^[6]. There are also reports of patients who had surgical management of less aggressive pancreatic tumours, where patients may be expected to survive long enough to manifest vitamin A deficiency^[7,8].

To our knowledge, we describe the first reported case of vitamin A deficiency in a patient with resected pancreatic adenocarcinoma who had unusually long survival for such a

tumour. This case highlights the need for awareness of the visual symptoms of vitamin A deficiency and the need to consider patients' past medical history and nutritional status when dealing with alterations in colour vision and/or nyctalopia. Clinicians should be vigilant in any patient at risk of vitamin A deficiency, as treatment is simple and very effective in relieving patients' symptoms and improving quality of life.

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REFERENCES

1 McBain VA, Egan CA, Pieris SJ, Supramaniam G, Webster AR, Bird AC, Holder GE. Functional observations in vitamin A deficiency: diagnosis and time course of recovery. *Eye (Lond)* 2007;21(3):367-376
2 Kemp CM, Jacobson SG, Faulkner DJ, Walt RW. Visual function and rhodopsin levels in humans with vitamin A deficiency. *Exp Eye Res* 1988;

46(2):185-197

3 da Rocha Lima B, Pichi F, Lowder CY. Night blindness and Crohn's disease. *Int Ophthalmol* 2014;34(5):1141-1144

4 Fok JS, Li JY, Yong TY. Visual deterioration caused by vitamin A deficiency in patients after bariatric surgery. *Eat Weight Disord* 2012;17(2): e144-146

5 Wilson HO, Datta DB. Complications from micronutrient deficiency following bariatric surgery. *Ann Clin Biochem* 2014;51(Pt 6):705-709

6 Roddy MF, Grealley P, Clancy G, Leen G, Feehan S, Elnazir B. Night blindness in a teenager with cystic fibrosis. *Nutr Clin Pract* 2011;26(6): 718-721

7 Appaswamy S, De Silva D, Tyagi A, Grocott LE, Heath PD, Gillow T. Reversible night blindness in a patient with neuroendocrine tumour of pancreas. *Eye (Lond)* 2005;19(6):720-722

8 Rowe PH, Taylor PR, Shearer MJ, Owen WJ. Vitamin A deficiency secondary to pancreatic carcinoid. Case report. *Acta Chir Scand* 1988;154(7-8): 487-488