



Paracentral Acute Middle Maculopathy Secondary to Multi-haematinic Deficiency Anaemia in an Adolescent Patient

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INTRODUCTION

- Paracentral acute middle maculopathy (PAMM) is caused by ischaemia of the intermediate and deep retinal capillary plexuses.
- It presents as hyperreflective band-like lesions within the inner nuclear layer on OCT.
- PAMM is commonly associated with retinal vascular occlusion, systemic hypoperfusion, and hypercoagulable states.
- Cases in otherwise healthy young patients are rare.
- Iron deficiency anaemia and associated haematinic deficiencies may contribute to endothelial dysfunction.

CASE SUMMARY

- 17-year-old female presented with sudden central visual loss in the right eye.
- Symptoms:
 - Dense central scotoma
 - Blurred vision
 - Fatigue and dizziness
 - Heavy menstrual bleeding

- Received high-dose tranexamic acid for menorrhagia.
- No prior ocular or thrombotic history.

Examination

- Visual acuity: Counting fingers OD
- Subtle grey-white parafoveal retinal whitening
- Left eye normal

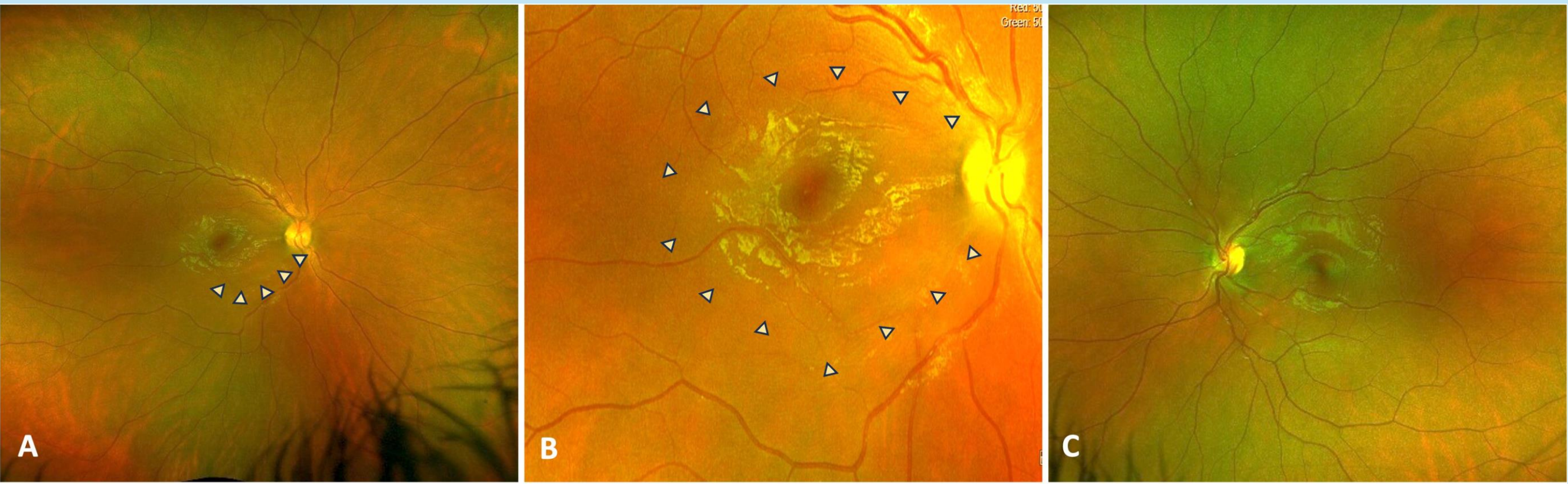


Figure 1: Ultrawide field pseudocolour images at presentation. A,B: Right eye showing macular pallor and obscured blood flow in the inferior arcade artery (yellow arrowheads). C: Left eye showing normal fundus.

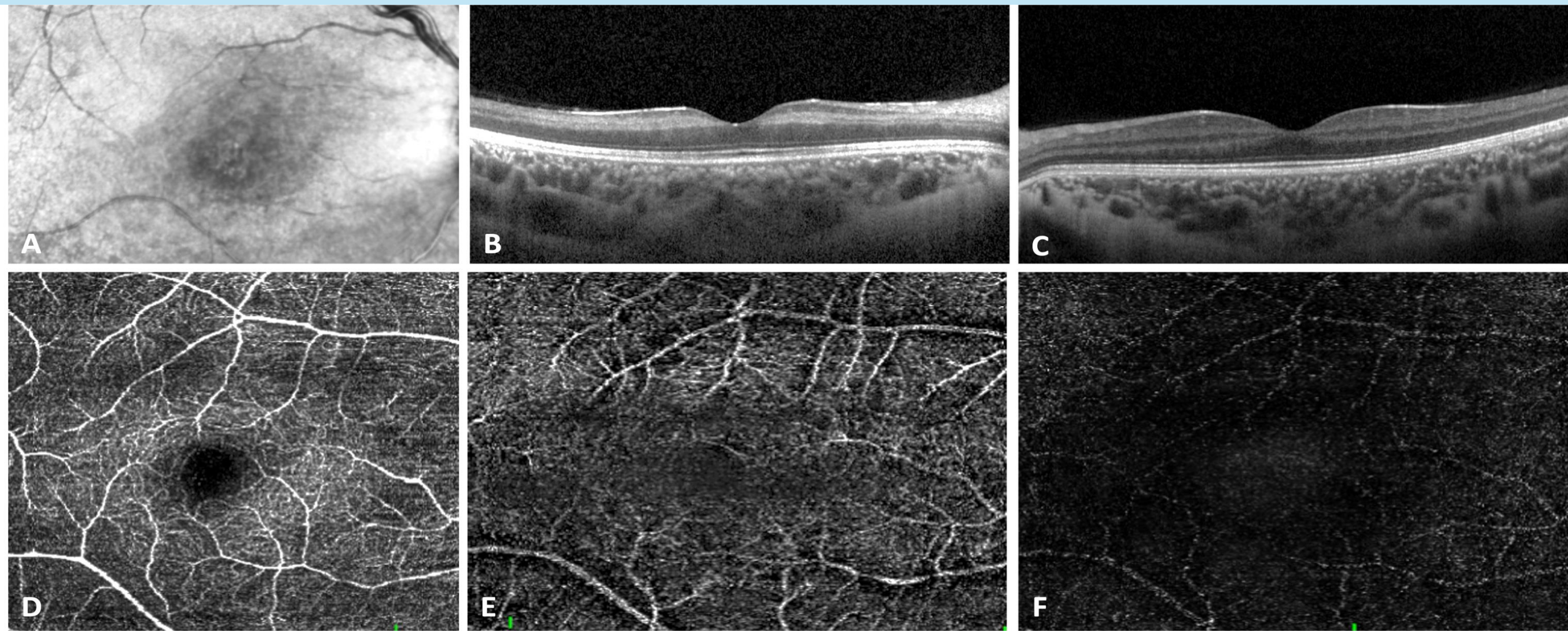


Figure 2: A: Near infrared en face image of right macula showing hypo-reflectance at macula. B,C: OCT through fovea showing hyperreflective inner nuclear and plexiform layers in the right eye and normal layers in the left eye. D-F: En face OCTA slabs of the superficial capillary plexus (D), deep capillary plexus (E), and avascular layer (F), with mild capillary voids in the deep capillary plexus.

INVESTIGATIONS

OCT Findings

- Hyperreflective band involving:
 - Inner nuclear layer
 - Inner plexiform layer
- Consistent with PAMM

OCTA Findings

- Mild deep capillary plexus flow reduction

FFA Findings

- No retinal non-perfusion
- No vasculitis
- No transit delay

Blood Tests

Parameter	Result
Haemoglobin	76 g/L ↓
Ferritin	4 µg/L ↓
Vitamin B12	18 pmol/L ↓
Folate	2.2 µg/L ↓
Homocysteine	Mildly ↑

- Thrombophilia screen: Negative
- MRI brain: Normal
- Echocardiogram: Normal

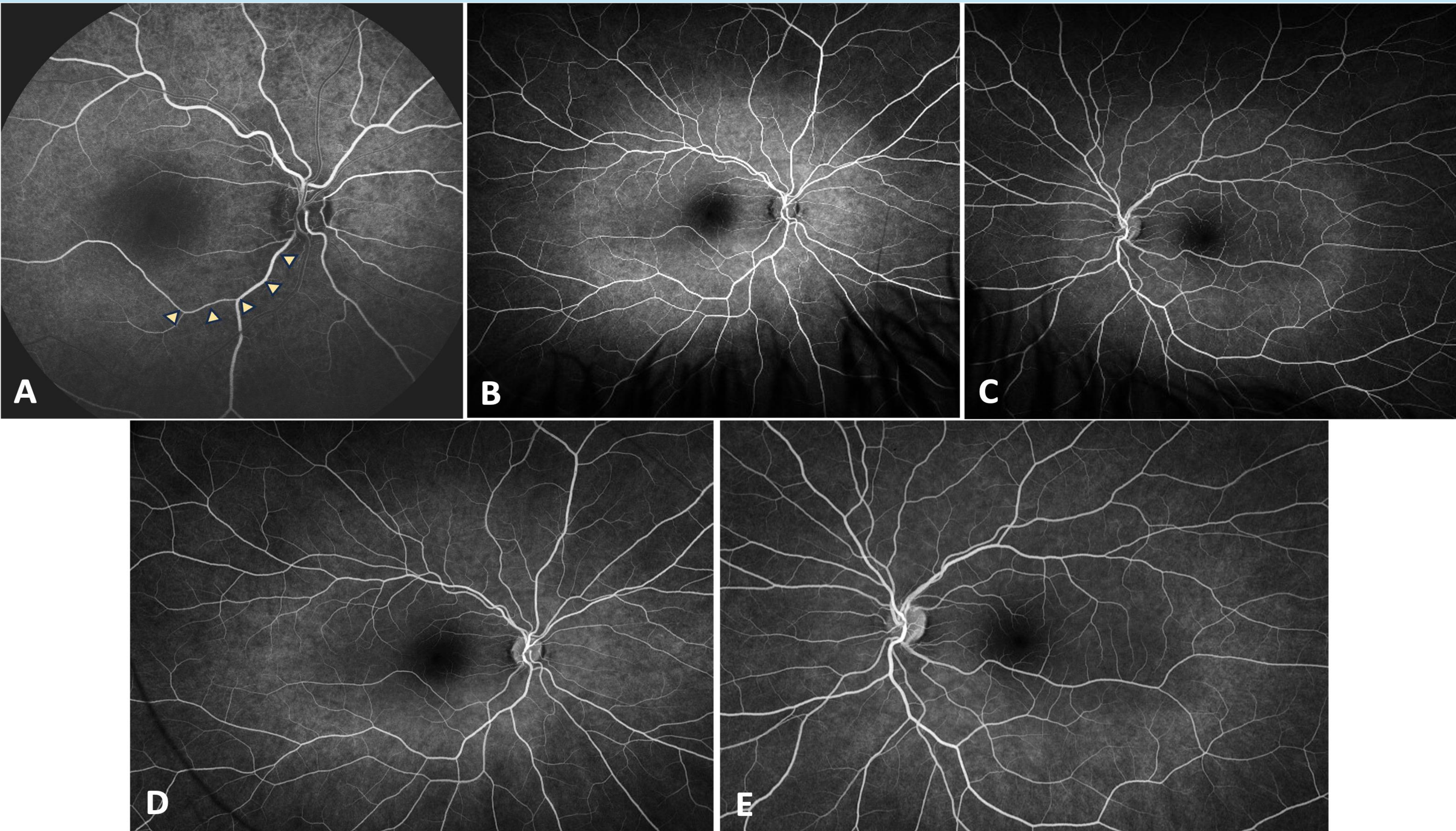


Figure 3: Fundus fluorescein angiography of the right eye showing no arteriovenous transit delay or filling defect in the vessel noted in Figure 1. No peripheral or macular capillary non-perfusion, vasculitis, or other abnormality is noted.

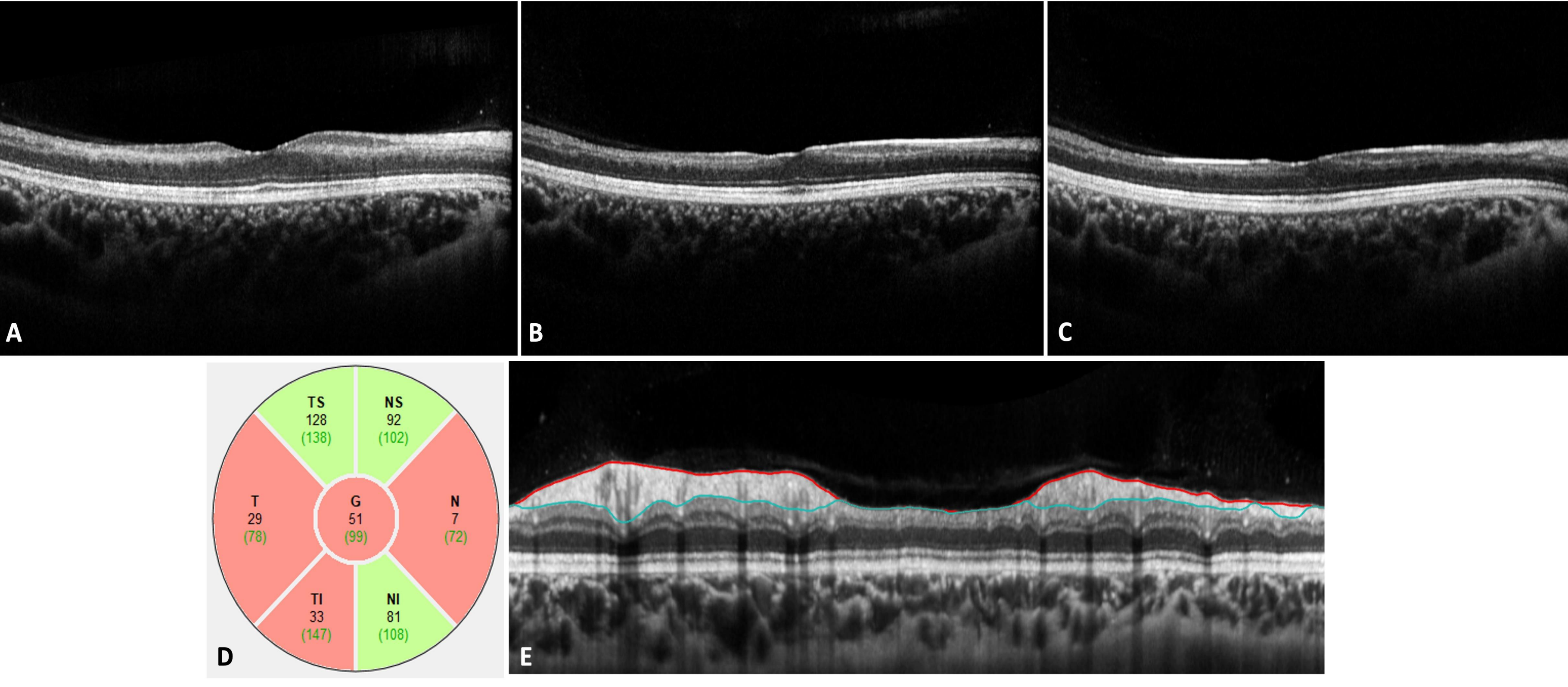


Figure 4: Serial OCT scans of the right macula showing hyperreflective inner retinal band at presentation (A), at seven months (B), and at one year (C). D,E: Retinal nerve fibre layer scans demonstrating significant progressive thinning.

DISCUSSION

- PAMM represents ischaemia of the deep retinal capillary plexus.
- Severe iron deficiency may cause:
 - Tissue hypoxia
 - Endothelial dysfunction
 - Reactive thrombocytosis
- Concurrent B12 and folate deficiency may elevate homocysteine and increase thrombotic risk.
- Tranexamic acid may theoretically contribute via antifibrinolytic effects.
- Despite haematological correction, visual recovery remained limited due to irreversible inner retinal ischaemic damage.

CONCLUSION

- PAMM should be considered in young patients presenting with unexplained central visual loss.
- Multi-haematinic deficiency can contribute to retinal microvascular ischaemia even without conventional vascular risk factors.
- Early systemic investigation and correction of deficiencies are essential.
- Established PAMM may result in permanent visual impairment.

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