ORIGINAL RESEARCH PAPER
Volume - 9 | Issue - 11 | November - 2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ULTRASOUND IMAGING OF PROLIFERATIVE VITREO-RETINOPATHY

Radiology

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KEYWORDS

Imaging Findings
Right Eye

- Right eye measures 24 mm in length with v shaped membrane in posterior segment of right eye which is attached to optic disc posteriorly
  P/o retinal detachment

- There are also multiple anechoic cystic lesions in posterior segment within above mentioned detached membrane.
  P/o proliferative retinopathy

Left Eye

- Left eye measures 27 mm in axial length with multiple echo's and echogenic debris in anterior and posterior segment of left eye with dependent echogenic debris noted in left eye
  P/o exudative haemorrhage

- There is also moving detached membrane in posterior segment of left eye which show multiple anechoic cystic lesions with e/o tiny cystic lesions within it
  P/o proliferative vitreoretinopathy

DISCUSSION

A. Background

PVR- is caused by epiretinal and subretinal membrane formation which is commonly associated with retinal detachment.
risk factors-large multiple retinal tears, vitreous haemorrhage, eye trauma, previous surgical procedures

Pathophysiology-

- Although the exact pathophysiology remains disputed, the development of PVR is a complex process
- Retinal detachment(Rhematogenous retinal detachment more commonly) serves as a nidus for membrane formation through induction of ischemia and subsequent cell death that arises from separation of the neuroepithelium from its rich choroidal blood flow.
- Cell death triggers a break down in the blood-retinal barrier([1,2]), thereby facilitating the influx of chemotactic and mitogenic factors that permit cell proliferation, migration, extracellular matrix deposition and contraction
- Similarly, the vitreous is suffused with growth factors and inflammatory mediators; thus, it serves as a milieu for cellular proliferation in the case of retinal detachment[3].
- All these factors contribute towards formation of proliferative vitreo-retinopathy

B. Clinical Perspective

- Typical presentations include dimnision of vision, photopsia, floaters, visual field defect.
- The diagnosis of PVR most of the times is by clinical examination. However, sometimes other diagnostic techniques become necessary -if ocular media is opaque due to cornea, lens, vitreous or other opacities retina cannot be visualised. In such cases ultrasound examination provides valuable information regarding structures of posterior chamber.

C. Imaging Perspective

Ultrasound Findings-

- partial or complete retinal cysts retinal detachment associated with sub retinal cyst formation
- Vitreous hemorrhage
- Retinal folds
- focal thickening in the macular area
- In advanced stages of the disease, preretinal membranes can form, which may contract and cause retinal detachment.

Other modalities of investigation/imaging- Magnetic resonance imaging of orbit

D.treatment Options-pars Plana Vitrectomy And Membrane Peeling[4], Scleral Buckling Procedure

Prognosis-With current surgical techniques, most eyes with PVR can now be reattached. However, despite recent advances, visual results of surgery for PVR remain poor.

Impact of imaging-ultrasound helps to delineate the structures in posterior chambers of eye better and also helps identifying other associated pathologies of vitreous and choroidal membranes and intraocular aspect of optic nerve which helps ophthalmologist for better management

E. Take Home Message / Teaching Points- Ultrasound Can Be Used As Index Modality For Investigating Choroidal, Vitreous And Retinal Pathologies

In proper clinical setting with retinal detachment with subretinal cyst, one should think of PVR

Final Diagnosis
Proliferative Vitreoretinopathy

Differential Diagnosis List

- Retinopathy of prematurity,
- Rhegmatogenous retinal detachment,
- tractional retinal detachment
- choroidal melanoma,
- kissing choroidal serous effusion,
- sequele to chronic uveitis.

Figure Captions- Ultrasound Imaging Of Proliferative Vitreoretinopathy

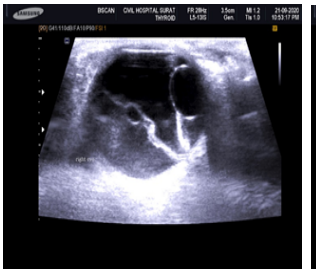

Fig-1

Fig-1

Fig-3

Fig-4

Fig1-4: V Shaped Membrane In Posterior Segment Of Right Eye Which Is Attached To Optic Disc Posteriorly With Multiple Anechoic Cystic Lesions In Posterior Segment Of Detached Membrane

-retinal detachment with proliferative retinopathy

Left Eye B Bscan

Fig-5

Fig-6

Fig-7

Fig-8

Fig 5-8: Multiple Echo's And Echogenic Debris In Anterior And Posterior Segment Of Left Eye With Dependent Echogenic Debris With Moving Detached Membrane In Posterior Segment Of Left Eye Which Show Multiple Anechoic Cystic Lesions With E/o Tiny Cystic Lesions Within It

-exudative Haemorrhage With Proliferative Vitreoretinopathy

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