



-RXUQDO RI &OLQLFDO
2SKWKDOPRORJ\

([SHULPHQW

gUQHN HW DO - &OLQ ([S 2SKWK
'2,

&DVH 5HSRUW

2SHQ \$F

3FUJOBM "OHJPNBUPVT 1SPMJGFTS B/WJTFB TJF " E
"OHJPNBUPVT 1SPMJGFTS B/WJTFB TJF JO \$PBU n

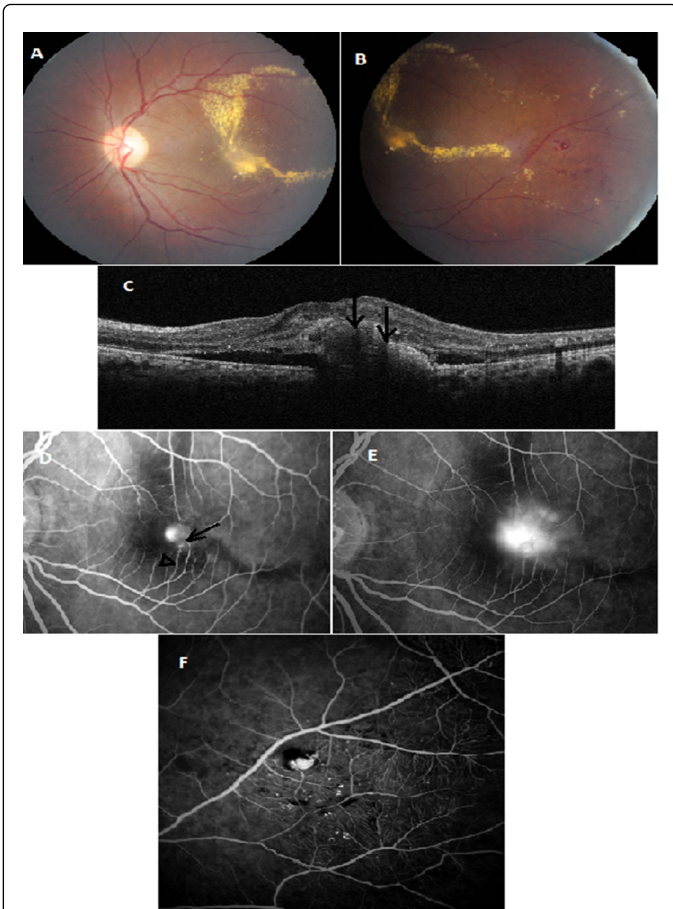
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'HSDUWPHQW RI 2SKWKDOPRORJ\ 6FKRRO RI OHGLFLQH .ÖUÖNNDOH 8QLYHUVLW\ 7XUNH\
3ULYDWH 3UDFWLFH \$QNDUD 7XUNH\
&RUUHVSRRGLQJ\DXWKRJ\UQHN 'HSDUWPHQW RI 2SKWKDOPRORJ\ 6FKRRO RI OHGLFLQH .ÖUÖNNDOH
QXUJXOBRUQH#KRWPDLQ FRP
5HFHLYHG18DWPHEHU \$FFHSHWG18DWPHEHU 3XEOLVKHG RGDWPEHU
&RSULJKW gUQHN 1 HW DO 7KLV LV DQ RSHQ DFFHVV DUWLFOH GLVWULEXWHG XQGHU WKH WHUPV RI
XVH GLVWULEXWLRQ DQG UHSURGXFWRQ LQ DQ\ PHGLXP SURYLGHG WKH RULJLQDO DXWKRU DQG VRXU

\$EVWUDFW
\$ \HDU ROG IHPDOH SDWLHQW KDG GHFUHDVHG YLVLRQ LQ KHU OHIW H\H IRU
ULJKW H\H DQG FRXQWLQJ ILQJHUV IURP P LQ OHIW H\H ([DPLQDWLRQ RI OHIW H\H
ZLWK JUD\LVK GLVFRORUDWLRQ RI FHQWUDO PDFXOD DQG DQHXU\VPDO DQG WHO
LQ WHPSRUDO PLG SHULSKHUDO UHWLQD 2SWLFDO FRKHUHQFH WRPRJUDSK\ RI
QHRYDVFXODU FRPSOH\ SLJPHQW HSLWKHOLDO GHWDFKPHQW VXEHWLQDO IOX
K\SHUIOXRUHVFXQW IRFXV ZLWK SHUHXVLQJ UHWLQDO DUWHULROH DQG GUDLQLQJ
UHWLQDO DQJLRPDWRXV SUROLIHUWLRQ 5\$3 LQ HDUO\ SKDVH IXQG XV IOXRUHV
ODWH SKDVH \$IWHU GRVHV RI PRQWKO\ LQMFWHG LQWUDYLWUHO UDQLEL]XP
DQHXU\VPDO DQG WHODQJLHFWDWLF YHVVOV ZH REVHUYHG FHQWUDO PDFXODU I
HGHPD 6R UHWLQDO DQJLRPDWRXV SUROLIHUWLRQ PD\ EH D IHDWXUH RI DGXOW

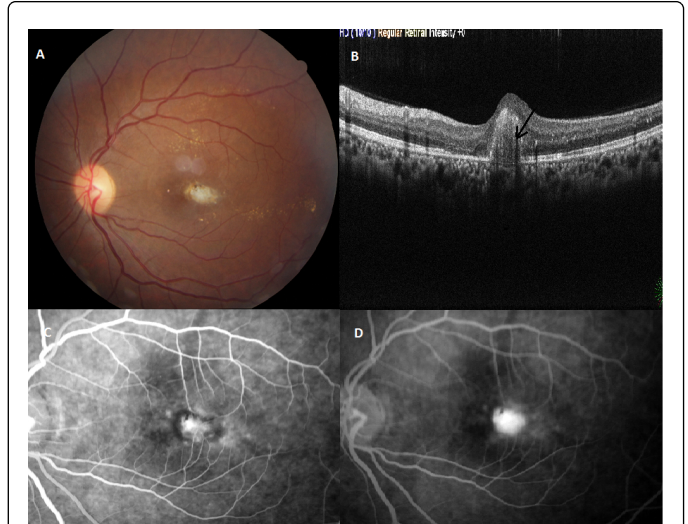
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SUROLIHUWLRQ
,QWURGXFWRQ
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YDVFXODU GLVHDVH ZLWKRXW DQ LQFLW\KGD WLRWRDWDW G PZRWK Q PR Z SHULSJKH\VD
,W IUHTXHQWO\ RFFXUV LQ PDOHV DQG LV W\SLFDOO\ XQLQDWHUDO /RFDOL]HG O
GHSRVLWLRQ DQG KHPRUUKDJR DSHXHG QVFFRPSOHWHV RSKWKDOPRORJLQDO H[DF
ERWK DW SHULSKHUDO DQG MX[WDPDFXODU PRJUDSK\ > 2& 5HWLQDVFDQ \$GYDQFH
LPDJLQJ DQG XRUJHG\FHLLR JUDSK\))\$ &D
5HWLQDO \$QJLRPDWRVLV 3UROLIHUWLRQSDSDQ\$3ZHUW\SHUIRUPHG 2&7LGHP
QHRYDVFXODUL]DWLRQ HPSKDV]HV WKEIRLYHOD QHRYDVFXODU DFRPSOH\ HWKH
QHRYDVFXODUL]DWLRQ DQG RULJLQDGHVU XRWLRQO\ 5BU RPU XFKKSSIRUHQDQV
FDSLOODULHV EXW DOVR IURP WKH WKEIRLYG QHRYDVFXODU FRPSOH\ EODFN
WHODQJLHFWDWLF UHVSRRQH DVVRFLD\$VMGRZHWK -XRQAMFURVLDZWK SHROLVHO
DFWLYLW\ OHDGLQJ WR UHWLQDO UHWLQDO RZQGH QURQLRU RHO DOHD DWVRZKR
DW IRYHD DQG WKUH ZDV OHDNDJEGCQH V
5HFHQWO\ 5\$3 KDV EHHQ UHSRUWHG LQ XUURXQG LQJSDWVROQ WSRFHV LQ ODW
FKLOGKRRG &RDWVd GLVHDVH E\ 6LJOH)\$SHWIDVH\$UDQWPWKSHULSJKHURDGNHWL
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GHVFU\EHVXKOW RQVHW &RDWVd GLVHDVH DVVRFLDWHG ZLWK 5\$3
\$VHUFRQVHFHWLYH PRQWKO\ LQMFWHG
DUJRQ ODVHU SKRWRFRDJDWLRQ DSSO
WHODQJLHFWDWLF YHVVOV EURLRUPHDEOD
HGHPD DQG UHGXFHG OLSLG H[XGDWLRQ

&DVH 5HSRUW

\$ \HDU ROG IHPDOH SDWLHQW GHVFDU\$D VGG PLYVERO HQ ERKGRUWRFRXOMKZL
VHYHDO PRQWKV 6KH GLG QRW KDYH DQWLQDQV HPLVGHV HQVGH %HWDFRRDUHRV
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LQ WOKH\H \$QWHULRU VHJPHQW H[DPVQLWLRQERWRGBOHUZLWKO WQLG RUGHU
DEQRVPPDQXV H[DPQLQDWLRQ RIHWHLKW E\H)\$DV\QRUPDO & DQG ' %HV FRU
ZDV GHQVH PDFXODU H[XGDWLRQ ZLWK RYDOLHU\$EVFRORVWLRQ RI FHQWUDO



HGHPD PDFXODU H[XGDWLRQ HSLUHWLQ
VHQVRU\ PDFXODU GHWFDFKPHQW KDYH EH
GLVHVDV > @



)LJXUH\$ \$VHU FRQVHFXWLYH PRQWKO\ LQ
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DQHXU\VPV DQG WHODQJLHFWDWLFV
PDFXODU HGHPD DQG UHGXFHG OLSLG H]
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UHYHDOV VXEIRYHDO QHRYDVFODU DUWHULROQRVSRVHWHUHQQLWLV SLJPHQRV D
RI WKH QHRYDVFODU FRPSOH\ LQWR WKHFRWRQ ZLWK UHSRWWHSRUQ FR
53(%UXFK PHPEUDQH 'DUN DUURZV VQRVWRPRJUDSKHQHWDWLRQ ZLWK UHSRWWHSRUQ
QHRYDVFODU' FRPSOH\SKDVHXRUGXVHWHUHQQLWLV KL HW DO > @ DOVR VKRZHG FRULRU
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SLJPHQW HSLWKHOLXP

'LVFXVVLQ

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IRU WKH GLDJQRVLY

&LWDWgRQH 1 2JXUHO 7 gUQHN . *•OHU +\$ 5HWLQDO \$QJLRPDWRXV 3UROLIHU
3UROLIHUWLRQ LQ &RDWV 'LVHVDVHGRLOLQ ([S 2SKWKDOPRO

3DJH RI

)XUWKHU VWXGLHV ZRXOG EH UHTXLUHG 2WDQLGSHKGDW.DGLDZKILV 6SKHQRPHQRDZ
PRUH \HDUV IROORZ XS RI &RDWV GLVHVDVH LQ

5HIHUHQFHV

5LVKL (5LVKL 3 \$\$\$XNXWWDQ % 8SDUNDU UHWKQSSBWKHWFWO 2SKWKDOPRO
GLVHVDVH RI DGXOW RQVHW LQ H\HV ,QGL 5XYSKMMKUPRO 0DVHORV 6 'RXYDOL 0
-XQ -+ .LP <& .LP .6 5HVROXWLRQ RI 5HWLQDO DQJLRPDWRXV SUROLIHUWLRQ 5
DGXOW &RDWV GLVHVDVH ZLWK LQWUDYLWUDU VSKLQWLBFFLHWBQQWLP 2FXQYDFXQROE
LQMHWLWRQ .RUHDQ - 2SKWKDOPRO 6D\DGL 0LHUH \$ 6RXLHG (+ &RKHQ 6<
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SUROLIHUWLRQ 5HWLQD 5LVKL 3 5LVKL (%KRMZDQL ' &RDWV
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