CASE REPORT

Unusual choroidal mass

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SUMMARY

We present a unique case of disseminated tuberculosis presenting initially in the eye solely as a choroidal mass without any inflammation, mimicking choroidal metastasis. A 19-year-old girl presented with a large choroidal mass lesion in the right eye. Systemic examination revealed axillary lymphadenopathy. A fundus fluorescein angiography, positron emission tomography scan, abdominal ultrasonography and raised biochemical markers such as serum CA-125 pointed towards the diagnosis of choroidal metastases with primary in the ovaries. Fine needle aspiration cytology of the adnexal mass and ascitic fluid revealed granulomatous inflammation with a negative acid-fast bacilli stain. A multiplex PCR of ascitic fluid for the sequence MPB64 and IS6110 was positive for tuberculosis. The final diagnosis of disseminated tuberculosis was made and the patient subsequently showed a good response to antitubercular therapy.

mimicking choroidal metastasis in the absence of any systemic problems in a young girl.

CASE PRESENTATION

A 19-year-old girl presented with decreased vision in the right eye (OD) since 1 month. On ophthalmological evaluation, her best-corrected visual acuity (BCVA) was 20/60 in OD and 20/20 in the left eye (OS). The fundus evaluation of OD revealed a large raised choroidal mass lesion along the superotemporal arcade with surrounding exudative retinal detachment (RD) without any vitreous inflammation (figure 1A). Ocular examination of OS was unremarkable. Her ocular, medical and family history did not reveal any positive findings. General physical examination revealed a thin-built female with body weight of 36 kg and axillary lymphadenopathy. A working diagnosis of choroidal granuloma, metastases and amelanotic melanoma was kept.

BACKGROUND

Choroidal mass can be a presenting feature of many systemic diseases including metastasis and tuberculosis (TB).^{1–3} Because of the insensitivity and non-specificity of the currently used clinical and biochemical tests, TB is often confused with metastasis. The challenge lies in establishing diagnosis in these cases because TB, when treated with appropriate therapy, has a better prognosis as compared to malignant lesions. We present a unique case of disseminated TB presenting in the eye solely as a choroidal mass without any inflammation,

INVESTIGATIONS

Ultrasonography (USG) of the eye lesion revealed the presence of an elevated mass lesion, which had heterogeneous intensity on a B-scan with surrounding shallow RD. A corresponding A-scan showed the presence of high reflectivity at the surface and irregular internal reflectivity within the mass. Ocular USG ruled out the possibility of amelanotic melanoma. Fundus fluorescein angiography (FFA) revealed the presence of hypofluorescence in the arteriovenous phase at the centre with mottled hyperfluorescence at the periphery of the mass lesion, favouring

Figure 1 Funduscopy of right eye (A) showing a large subretinal yellowish white, smooth dome-shaped lesion almost 10 disc diameters in size, with a tense and well-defined border in superotemporal quadrant of the retina and surrounding exudative retinal detachment involving the fovea (black arrow). Same patient at 8-month follow-up after receiving antitubercular drug showing flattened yellowish scar (B).

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Figure 2 Full body positron emission tomography scan at presentation (A) showing intense fluorodeoxyglucose (FDG) uptake along the thickened visceral peritoneum, serosal membranes along the intestinal coils, peritoneum along the surface of liver and in the pouch of Douglas. Transverse abdominal scan (B) showing intense FDG uptake in the wall of multiloculated mildly enhancing cystic lesions in both ovaries (red arrow) with ascitic fluid. Same patient at 8-month follow-up showing reduced FDG uptake on full body scan and transverse abdominal scan (C and D).

metastasis. In the late stage, staining of mass was present with pooling of dye in the area of exudative RD.

Laboratory investigations including complete haemogram, peripheral blood smear, chest X-ray, liver function test, kidney function test and urine examination were normal except for raised erythrocyte sedimentation rate values (40 mm at first hour). HIV serology was non-reactive. CD4 counts were 277 cells/ μ L (normal range 410–1590 cells/ μ L). Tuberculin skin test was negative with an induration less than 10 mm. A positron emission tomography (PET) scan showed intense 18F-fluorodeoxyglucose (FDG) uptake (SUVmax 13.5) in the wall of both multiloculated ovaries, thickened visceral peritoneum, serosal membranes along the intestinal coils and right choroidal mass features suggestive of

metastasis with primaries in ovaries (figure 2A,B). Abdominal USG confirmed the presence of a bilateral ovarian mass (R 8.3 $\times$ 8 $\times$ 7 cm; L 5.1 $\times$ 4.2 $\times$ 5 cm) with matted gut loops and ascites. Serum CA-125 level and lactate dehydrogenase (LDH) level were raised; 338.3 U/mL (normal range <35 U/mL) and 803 U/L (240–480 U/L), respectively. To confirm the histopathological diagnosis, a fine needle aspiration cytology (FNAC) of the adnexal mass and ascitic fluid was carried out, which revealed granulomatous inflammation with negative acid-fast bacilli stain (figure 3A,B). Multiplex PCR of ascitic fluid for the sequence MPB64 and IS6110 was positive for *Mycobacterium tuberculosis* (MTB) (figure 3C). Final diagnosis of choroidal tuberculoma with disseminated TB was made.

Figure 3 Fine needle aspiration cytology smears (A) showing multiple epithelioid cell granulomas (white arrow), few multinucleated giant cells, histiocytes and polymorphs (black arrow) with background showing necrosis (B). Multiplex PCR gel photograph (C) (L1: molecular marker; L2: positive control; L4: DNA of patient and L5: negative control) showing 240 bp for MPB64 (yellow arrow) and 123 bp for IS6110 (red arrow) which is positive for patient (L4).

TREATMENT

The patient was started on antitubercular drugs (ATT) comprising of isoniazid, rifampicin, ethambutol and pyrazinamide along with pyridoxine. Oral steroids (1 mg/kg body weight) were started after 2 weeks of initiating ATT.

OUTCOME AND FOLLOW-UP

The fundus lesion started regressing in size with the resolution of surrounding exudative RD within a few weeks of treatment (figure 1B). At the 8-month follow-up, her BCVA improved to 20/20 in OD with a flat yellowish scar seen at the area of tuberculoma. At 8 months, abdominal USG showed complete resolution of ascitic fluid. The PET scan (figure 2C,D) also showed improvement with FDG uptake decreased to SUVmax 9.2 in both the ovaries.

DISCUSSION

We faced a challenge in diagnosing this case because of some unusual findings. First the patient presented with large choroidal tuberculoma without any associated vitreous inflammation, which is usually associated with ocular TB. Patients with miliary TB/disseminated TB and those with depressed T-cell immunity including HIV-infected individuals can develop tuberculoma with little overlying vitreous inflammation.⁴ Low immunity in the above case can be explained with isolated CD4 T-lymphocytopenia. This also explains the false-negative tuberculin test in this case. Second, the FFA showed presence of mottled fluorescence at the periphery of the lesion in the

arteriovenous phase, favouring the diagnosis of metastases. Classically, tuberculoma is hypofluorescent in early phases and becomes hyperfluorescent in the late phases, though not a diagnostic feature.⁴ Variations from the usual FFA feature have also been reported including mottled appearance in dye transit phase which may be due to associated retinal pigment epithelium changes at the periphery of lesion. Third, abnormal abdominal USG findings showing bilateral ovarian masses, matted gut loops and ascitic fluid with raised serum CA-125 level and LDH level pointed towards initial diagnosis of ovarian malignancy. Koc *et al*⁵ reported similar cases of pelvic TB presenting with abdominal masses and raised CA-125 levels, masquerading as ovarian malignancies necessitating unnecessary laparoscopy/laparotomy. Hence, before planning any major surgical intervention a USG-guided FNAC could be helpful to avoid any diagnostic surprise. Fourth, PET using F18 FDG uptake is effective in differentiating a benign from malignant disease owing to increased glucose metabolism of the malignant cell. FDG uptake level of SUVmax level of 1.6–9.6 have been reported in enlarged mediastinal or hilar lymph nodes in patients with TB-associated uveitis.⁶ On the contrary, the above case documented intense FDG uptake (SUVmax: 13.5) in bilateral ovarian masses with various foci of increase uptake in other parts of the body, further confusing the issue. Activated inflammatory cells including lymphocytes and macrophages having marked increase of glycolysis for phagocytosis that could be responsible for high positivity of FDG-PET.⁷ Decrease in FDG uptake levels at 8 months after starting ATT again supported the

diagnosis of TB. This suggests that in geographic regions with a high prevalence of granulomatous lesions, positive FDG PET results should be interpreted with caution in differentiating benign from malignant pelvic lesions.

PCR is rapid and highly specific method for identification of MTB genome in abdominal TB and with the advent of multiplex PCR sensitivity is further increased to more than 70%.⁸ With routine investigations, such as FFA, USG and PET scans that may confuse the issue, confirmatory diagnosis can only be made after histopathological evidence and, recently, with use of PCR of body fluids in atypical cases.

Learning points

- ▶ Ocular tuberculosis (TB) can present as tuberculoma without any reaction in anterior and posterior chamber in eyes with disseminated TB.
- ▶ In geographic regions with high prevalence of TB, positive fluorodeoxyglucose positron emission tomography with raised tumour marker results should be interpreted with caution in differentiating TB from malignant pelvic lesions.
- ▶ Multiplex PCR for TB is an important investigation for clinching diagnosis in atypical cases.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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