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Case Report

Intraparotid lymph node toxoplasmosis diagnosis by fine needle aspiration cytology

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ABSTRACT

Toxoplasmosis is a relatively common disease caused by the *Toxoplasma gondii* parasite. Its clinical manifestations are dependent on the immune status of the patient, and the correct diagnosis is established based on a combination of direct parasite visualization and serological assays for the detection of host antibodies acting against the parasite. This study presents a case of intraparotid lymph node toxoplasmosis diagnosed by fine needle aspiration cytology presenting bradyzoite- and tachyzoite-compatible structures associated with serology assays. After diagnosis, treatment comprised a triple antimicrobial scheme and follow-up for six months, and the patient reached total regression. Thus, it is concluded that FNAC associated to serology assays comprise adequate tools for toxoplasmosis diagnoses.

1. Introduction

Toxoplasmosis is a relatively common disease caused by *Toxoplasma gondii*, an intracellular protozoan [1]. This parasite exists in nature in three distinct forms: a) oocyst, which releases sporozoites; b) the tissue cyst, which contains and can release bradyzoites and c) the tachyzoite, a proliferative, fast-dividing form.

Clinical manifestations are dependent on the immune status of the patient [2]. Typically, primary infection is asymptomatic, and when symptomatic in the acute phase, mimics non-specific infectious mononucleosis symptoms, such as cervical lymphadenopathy, low fever, and fatigue. Usually, a toxoplasmosis diagnosis is not considered even if the most typical clinical manifestations of this disease are isolated, such as cervical and occipital lymphadenopathy [2–4]. This can be established by direct examinations that demonstrate the presence of the parasite through fluid analyses, such as Polymerase Chain Reaction (PCR), direct detection of the parasite itself by fine needle aspiration (FNAC), or indirect detection by the presence of antibodies, with no parasite isolation [4,5].

Fine needle aspiration cytology (FNAC) are widely applied in toxoplasmosis diagnoses, as they provides sufficient information to guide the clinician, excluding possible lymphomas or metastases, aiming for treatments that allow the patient to not remove lymph nodes [6]. Both minimally invasive techniques should be performed after clinical evaluation and detailed anamnesis, and are valuable tools in the diagnosis of several infective organisms, mainly parasitic and fungal microorganisms, including *T. gondii* [7].

The most commonly applied therapeutic regimen is a combination of sulfadiazine and pyrimethamine that inhibits *T. gondii* metabolism. However, no large-scale randomized studies concerning anti-toxoplasmosis drugs are available, and scientific evidence supporting the efficacy of these treatments is required [8].

In this context, the present study aims to report a case of intraparotid lymph node toxoplasmosis diagnosed by FNAC.

2. Case report

The patient, a single 60-year-old Afro-Caucasian Brazilian female presented complaints concerning an increased volume on the left parotid region. During anamnesis, she reported a lesion with a three-month evolution. She had recently undergone a full-thickness abdominal ultrasound examination, which identified an indistinctive hepatomegaly.

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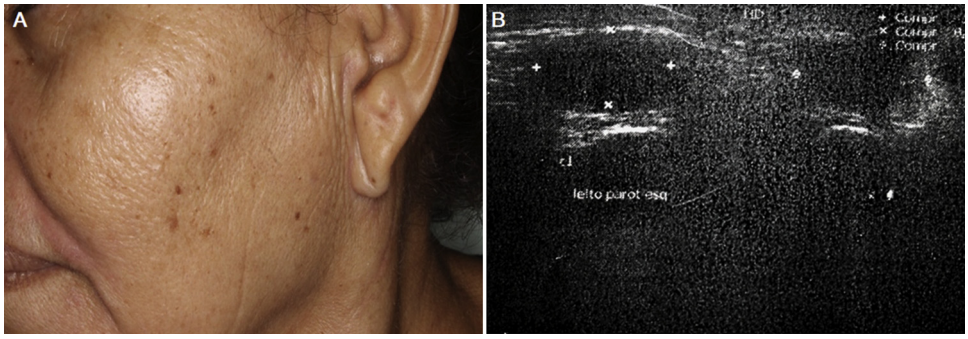

Fig. 1. (A) Nodule, with approximately 2 cm, located in the left parotid region and (B) ultrasound examination revealed a hypoechoic regular lesion.

An extraoral physical examination revealed a well-defined volume increase, characterized by a firm mobile nodule, painless to palpation, measuring approximately 2 cm, located in the left parotid region, (Fig. 1), and patchy skin lesions. An ultrasound examination was requested, and a parotid gland cyst of unknown nature was revealed. No significant changes were detected during an intraoral examination.

FNAC was performed on the nodule, detaching a cystic-like material with bradyzoite- and tachyzoite-compatible structures (Fig. 2). After cytological examination, serology test for *T. gondii* was negative for IgM and presented over 400 UI/mL IgG. The chosen therapeutic course was a triple scheme consisting of sulfadiazine 500 mg (2 tablets, 6/6 h), pyrimethamine 25 mg and folinic acid 10 mg (1x/day), for seven days. Subsequently, the patient was referred to the Infectology Service, which confirmed the prescribed therapy and extended its use for another two weeks. The patient underwent a six-month follow-up, without recurrences.

3. Discussion

The main *T. gondii* reservoirs are common cat and other felines. Organisms present in the intestinal cycle are passed into cat feces and mature into infectious cysts within 3–4 days in the external environment [9]. Toxoplasmosis prevalence increases with age, with no preference for sex. Human transmission is usually caused by the ingestion of cysts containing bradyzoites in infected meat, other food sources containing oocysts and/or contact with cat feces [10]. In the present case, no events that may have contributed to the appearance of the lesion were reported.

Although usually an asymptomatic disease and, if symptomatic, presenting as mild, toxoplasmosis may be severe in fetuses, depending on their development stage, as well as in immunocompromised patients [10]. Acute illness symptoms include fever, headaches, chills, lymphadenitis, and fatigue, similarly to infectious mononucleosis. Chronic signs and symptoms include lymphadenitis, a rash (occasionally), hepatitis, encephalomyelitis and myocarditis [9]. Toxoplasmosis manifesting as a parotid mass is rare and only 14 clinical reports of intraglandular toxoplasmic lymphadenitis have been previously reported in the English literature [11,12]. In this case, the patient presented asymptomatic chronic toxoplasmosis with an increased volume in the left parotid region, highlighting the importance of this case report.

T. gondii infection causes both humoral and cellular immune responses. The former leads to increased levels of specific immunoglobulin circulation, including IgA, IgM, IgE and IgG. The qualitative, kinetic and quantitative analyses of these antibodies (mainly IgM

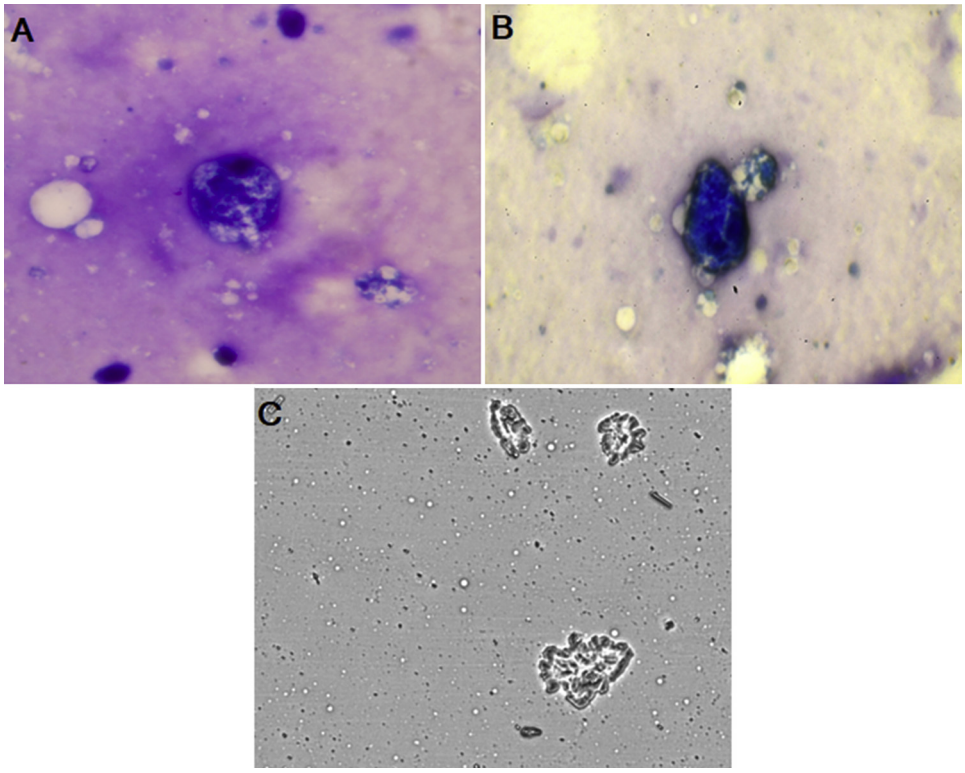

Fig. 2. Photomicrograph of cytological analysis showing structures compatible with Toxoplasma gondii forms. (A–B) Panoptic staining (magnification ×400) showing forms compatible with cysts filled with bradyzoites. (C) Image of rosettes constituted with crescent shaped structures, with a pointed anterior end and a rounded posterior end compatible with tachyzoites forms (grayscale image ×200).

and IgG) are widely applied in toxoplasmosis diagnosis or monitoring. Positive IgM results indicate recent exposure or an ongoing acute infection [13] while IgG appears two weeks after IgM, reaching a plateau within 2 or 3 months and then decreasing rapidly and displaying lifelong persistence at residual titers which are highly variable among patients. Thus, IgG indicates a chronic infection or a three- to five-month exposure [10,13]. Although the patient did not present detectable serum IgM, IgG titer levels were significant, which could indicate a chronic-state lesion.

A correct toxoplasmosis diagnosis is established by the combination of direct parasite visualization and serological assays for antibody detection [5]. Herein, the diagnosis was obtained by parasite detection by FNAC and positive IgG serology.

Most current toxoplasmosis treatment regimens are based on case reports and series, and not randomized clinical trials. In this scenario, several drugs are used to treat this disease, acting primarily against tachyzoites. The most common treatment is a combination of sulfadiazine and pyrimethamine, which is very useful, but displays imprecise efficacy. Other widely applied drugs are azithromycin, clindamycin, lincomycin [8]. Following the proposed literature, the therapeutic scheme in the present case was set as a combination of drugs for two weeks associated to folinic acid in order to minimize pyrimethamine effects, which proved to be quite effective in lesion remission.

Thus, it is concluded that FNAC associated to serology assays comprise adequate tools for toxoplasmosis diagnoses. Furthermore, the combined therapy of sulfadiazine, pyrimethamine and folinic acid was shown to be been effective in the treatment of this pathology.

Ethical approval

The authors wish to declare that all experiments on human subjects were conducted in accordance with the Declaration of Helsinki. Ethical approval for this study was obtained from the relevant local ethics committees and patient consent was obtained.

Conflict of interest

Author Martins HDD declares no conflict of interest. Author Vaz BAS declares no conflict of interest. Author Lins LS da S declares no conflict of interest. Author Gondim BLC declares no conflict of interest. Author Castellano LRC declares no conflict of interest Author Bonan PRF declares no conflict of interest.

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References

[1] Montoya JG, Liesenfeld O. Toxoplasmosis. Lancet Lond Engl 2004;363:1965–76. https://doi.org/10.1016/S0140-6736(04)16412-X.
[2] Li B, Zou J, Wang W-Y, Liu S-X. Toxoplasmosis presented as a submental mass: a common disease, uncommon presentation. Int J Clin Exp Pathol 2015;8:3308–11.
[3] Neville BW, Damm DD. tradução Renata Tucci, Mônica Israel]. Patologia Oral & Maxilofacial. 4th ed. Rio de Janeiro: Elsevier; 2016.
[4] Saadatnia G, Golkar M. A review on human toxoplasmosis. Scand J Infect Dis 2012;44:805–14. https://doi.org/10.3109/00365548.2012.693197.
[5] Hosokawa S, Kusama Y, Ono T, Mineta H. Toxoplasma lymphadenitis diagnosed by fine-needle aspiration cytology: a rare finding. J Laryngol Otol 2014;128:561–4. https://doi.org/10.1017/S0022215114001261.
[6] Natella V, Cozzolino I, Sosa Fernandez LV, Vigliar E. Lymph nodes fine needle cytology in the diagnosis of infectious diseases: clinical settings. Infez Med Riv Period Eziologia Epidemiol Diagn Clin E Ter Delle Patol Infett 2012;20(Suppl. 3):12–5.
[7] Gochhait D, Dey P, Rajwanshi A, Nijhawan R, Radhika S, Gupta N. Spectrum of fungal and parasitic infections on fine needle aspiration cytology. Diagn Cytopathol 2015;43:450–5. https://doi.org/10.1002/dc.23247.
[8] Rajapakse S, Chrishan Shivanthan M, Samaranayake N, Rodrigo C, Deepika Fernando S. Antibiotics for human toxoplasmosis: a systematic review of randomized trials. Pathog Glob Health 2013;107:162–9. https://doi.org/10.1179/2047773213Y.0000000094.
[9] Murray P, Rosenthal K, Pfaller M. Medical microbiology. 8th ed. Elsevier; 2015.
[10] Robert-Gangneux F, Dardé M-L. Epidemiology of and diagnostic strategies for toxoplasmosis. Clin Microbiol Rev 2012;25:264–96. https://doi.org/10.1128/CMR.05013-11.
[11] Aydil U, Ozçelik T, Kutluay L. Toxoplasmosis lymphadenitis mimicking a parotid mass. Kulak Burun Bogaz Ihtis Derg KBB J Ear Nose Throat 2010;20:97–9.
[12] Shashy RG, Pinheiro D, Olsen KD. Toxoplasmosis lymphadenitis presenting as a parotid mass: a report of 2 cases. Ear Nose Throat J 2006;85:666–8.
[13] Dard C, Fricker-Hidalgo H, Brenier-Pinchart M-P, Pelloux H. Relevance of and new developments in serology for toxoplasmosis. Trends Parasitol 2016;32:492–506. https://doi.org/10.1016/j.pt.2016.04.001.