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Case Report

Pathology Section

Cytomorphology of Castleman's Disease of Parotid Gland: Pitfalls and Diagnostic Dilemma in a Young Adult

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ABSTRACT

Fine needle aspiration cytology (FNAC) is an easy, effective diagnostic tool that makes it the procedure of choice for all accessible swellings in the body. Castleman's disease (CD) may present as unicentric or multicentric swelling hence is subjected to FNAC very frequently. CD mainly presents mediastinal nodes, nonetheless when present in salivary glands such as parotid, it is often diagnosed clinically as a salivary gland tumor. However, due to lack of adequate literature on its cytological features and non-specific radiological findings, the condition is often misdiagnosed. There are few case series on cytological features of CD and even fewer cases of CD in the parotid gland. Histopathology serves as the gold standard of diagnosis for CD. In superficial locations, these swellings are easily subjected to direct fine needle aspiration cytology (FNAC). Radiologically guided FNA can be performed for deeper locations. Hence, the authors present a case of 19 year old male patient, who presented with a small superficial, preauricular swelling for FNAC. The initial FNAC yielded no conclusive opinion. however a repeat FNAC and histopathological examination led to the final diagnosis. This case report aims to highlight the cytomorphological and histopathological features of CD in the Parotid gland and various difficulties encountered in making the final diagnosis.

Keywords: Cytology, Hyaline vascular variant, Lymphoid angiomatous hamartoma, Parotid gland, Plasma cell variant

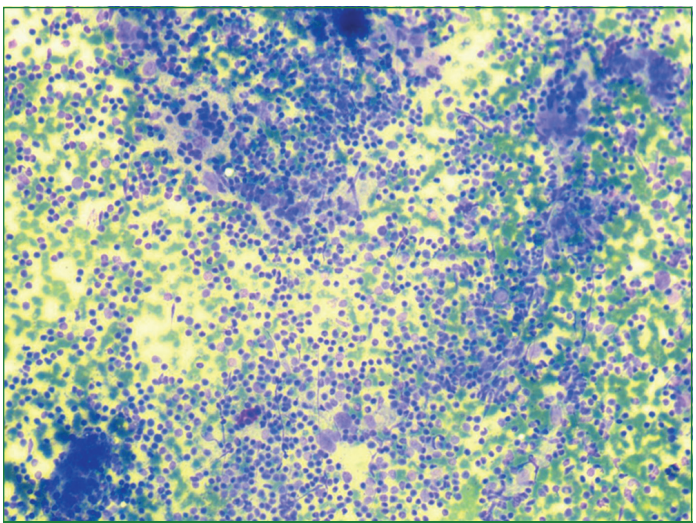
CASE REPORT

A 19-year-old male patient presented with a small swelling in the preauricular area of the right side from seven months. He complained of mild pain for about past 5 months. On examination, the swelling was well defined, superficial, non tender and measured at approximately 1×0.6 cms. Because of its superficial location, a differential of salivary gland neoplasm was made. FNA was attempted with a 22G needle and smears prepared from material aspirated. The smear mainly comprised of lymphoid cells, occasional plasma cells [Table/Fig-1].

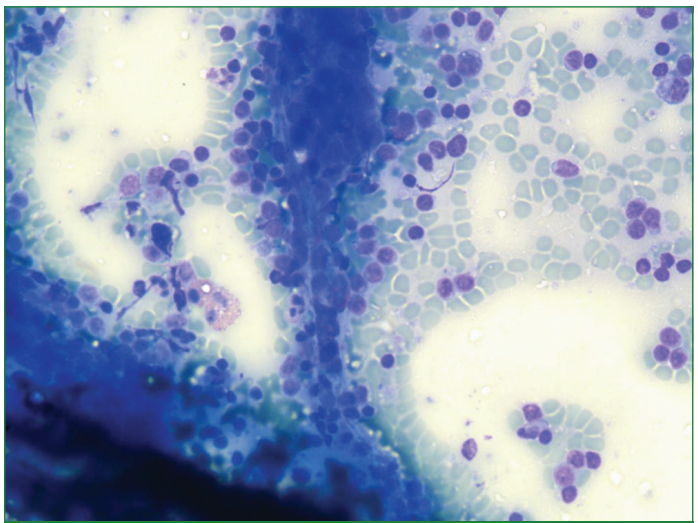
The findings were inconclusive and a repeat FNAC with the radiological investigation with follow-up was advised. The patient was non-compliant during follow-up and returned to the hospital after one year with a larger swelling. The swelling now measured 3.5×3 cms and mild tenderness was also reported. The patient also complained of pain during chewing of food. The patient was sent to Pathology Department and FNA was attempted. Material was aspirated, smears prepared and stained with giemsa stain. The smears showed scattered reactive lymphoid cells, some benign looking bare nuclei with inconspicuous nucleoli, and non discernible cytoplasm. Traversing vessels were also seen along with germinal centres. Few eosinophils and plasma cells were also seen [Table/Fig-2].

In view of the mixed population of cells and large size of swelling, the differential of Non-Hodgkin Lymphoma was made and an excisional biopsy was advised.

Total conservative parotidectomy was performed and the lesion was sent for histopathological examination. A capsulated globular structure measuring 4.5×4.5×3.5 cms was received in Histopathology Department for diagnosis. Grossly, the cut section

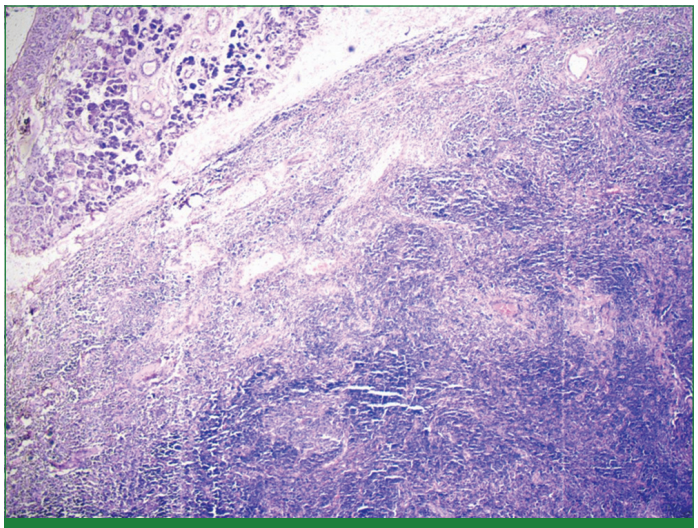


[Table/Fig-1]: May Grunwald-Giemsa (MGG) stain, 10X showing numerous follicular dendritic cells, lymphocytes and other lymphoid cells.



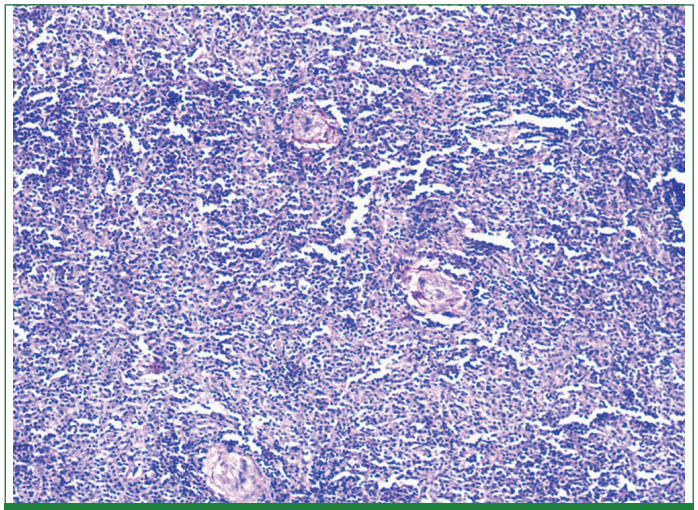
[Table/Fig-2]: MGG stain, 40X showing traversing vessels in a germinal centre along with eosinophils and lymphoid cells.

revealed areas of hyalinization or scarring within the tissue. Serial sectioning was done, the tissue was processed in a routine manner, slides were prepared and stained with Haematoxylin and Eosin (H&E). Microscopy revealed an encapsulated lesion with a capsule showing salivary gland tissue [Table/Fig-3].

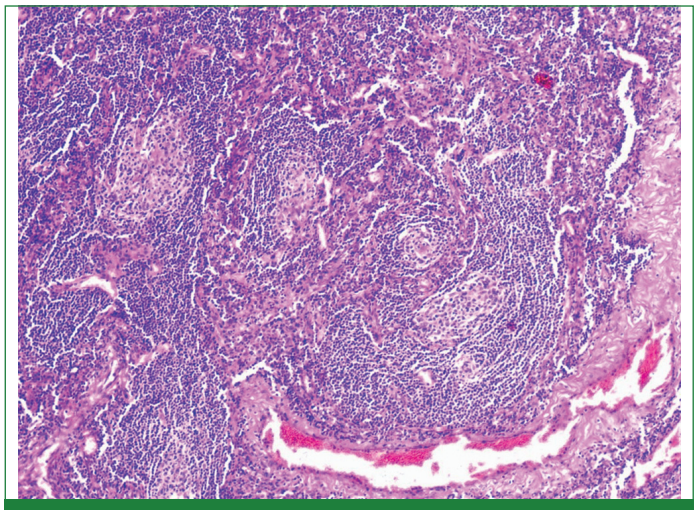


[Table/Fig-3]: Haematoxylin and Eosin (H&E), 4X (Scanner view)- Parotid gland with the lesion. The lesion is showing hyperplastic germinal centres in low power view.

The lesion was composed of small and large lymphocytes. At places, reminiscent of lymph node was seen. There were also areas of hyperplastic germinal centers with vessels showing hyalinization [Table/Fig-4], and onion skin appearance [Table/Fig-5].



[Table/Fig-4]: H & E, 10X- Sclerosed vessels within the lesion.



[Table/Fig-5]: H & E, 10X- Rimming of lymphocytes (Onion skin appearance) seen characteristically in hyaline vascular type of Castleman disease.

Areas of fibrosis were also seen. Few large lymphoid cells were also seen within the germinal center representing the centroblasts and centrocytes. Thus, based on the histological findings, a diagnosis of Hyaline vascular Castleman's disease was given. The patient was in follow up for one year, till which no recurrence was reported. After one year, the patient was lost in follow-up.

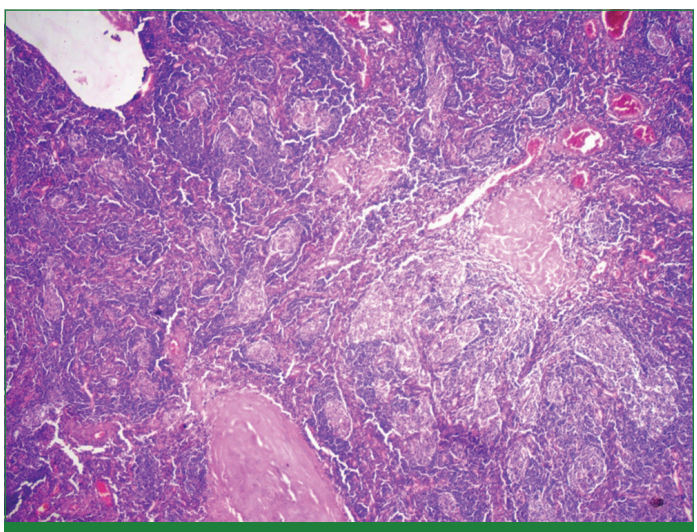
DISCUSSION

Around 1956, Benjamin Castleman described a case of mediastinal lymph node mass in 40 years old with histological features of lymph node hyperplasia and follicles with hyalinized centers [1]. Castleman's disease (CD) has been since described by various authors by different names as giant lymph node hyperplasia, angiomatous lymph node hyperplasia, lymphoid angiomatous hamartoma, follicular lymphoreticuloma and Castleman's lymphoma [2]. The most common site of involvement in CD has been described as mediastinal lymph nodes. The rarer sites involved are salivary glands, extremities, lungs, and nasopharynx [3,4]. CD is classified clinically into two subtypes as Unicentric (UCD) and Multicentric (MCD). In the UCD, only one lymph node is involved mostly the mediastinal nodes, rarely the abdominal lymph nodes. In the MCD type, the disease presents as a disseminated form with generalized lymphadenopathy [4]. Microscopically, the CD has been divided into three types:

- Hyaline vascular Castleman disease (HVCD),
- Plasma cell Castleman disease (PCCD),
- Mixed variant. Of the three histological variants, HVCD is the most common variant accounting for 90%, and most commonly presents as a mediastinal nodal mass followed by the neck and abdomen [5].

Within the head and neck region, it presents as a mass in the mediastinum to the cervical area or as a single nodule under the sternocleidomastoid muscle. Involvement of the salivary gland is infrequent and the parotid gland is even more rarely involved [6]. Kardouni Khoozestani N, et al. mentioned in their article that parotid was the most common site of involvement in CD as compared to other salivary glands [7]. In the present case, the lesion was located superficially in the right parotid gland mimicking a salivary gland tumor.

The etiology of this disease is unknown and several theories have been proposed for its pathogenesis. The strongest hypotheses indicate a relation between a virus or chronic inflammation and lymphoproliferation [8]. The Hyaline vascular type is the most common subtype histologically accounting for 80-90 % of the cases [9]. This variant occurs over a broad age range and, in most studies, males and females were equally affected. In the present case discussed, at a few places, blood vessels were seen penetrating the germinal centers also known as "lollipop lesions" [Table/Fig-6].



[Table/Fig-6]: H & E, 10X- Lollipop lesions in Hyaline vascular type Castleman disease.

Around 20% of cases of MCD are plasma cell types. The mixed type is scarce and characterized by a mixture of the two types [8]. Since the disease shows nonspecific clinical, radiological, or cytological features; the diagnosis is challenging and should be made only on histopathological examination. Total excision is the treatment of choice for UCD in the head and neck area. However, the non operable patients may need radiotherapy. Because of the aggressive nature of the MCD form, it is only cured by palliative treatment [10].

Cytodiagnostic Pitfalls

In the first FNAC attempt, only a few reactivated lymphoid cells were seen, and hence no opinions were made. However, in the second FNAC: reactive lymphoid cells, some bare nuclei with inconspicuous nucleoli and non-discernible cytoplasm, occasional giant cells, few eosinophils, and plasma cells were seen. Also, numerous capillaries with hyaline walls was noticed. Reed-Sternberg-like large, atypical cells that were seen in the smears lacked any nuclear atypia. The lymphocytes also did not exhibit any atypia. The first case report of CD by Hidvegi DF et al in 1981 described the cytological features that are agreeable with the present case [11]. Clustering of large cells, follicular dendritic cells(FDCs) with small lymphocytes seen in the present case was also described by some other authors [4,12]. Mallik MK et al have described occasional hyalinized vessel fragments in their study [4]. However, Lisa M et al did not find any capillary fragments in their aspiration smears [12]. Significant cytomorphological findings, which help in the recognition of CD are the presence of large Follicular Dendritic Cells (FDCs) with large nuclei having inconspicuous to small nucleoli, the chromatin of these nuclei are either fine or coarse with an appearance of crumpled tissue paper [4,12]. Similar large cells have been noted not only in the present case but also described by earlier authors.

Other important features which must not be ignored are the presence of a significant number of capillary fragments and small lymphocytes. A mixed type of CD is characterized by the presence of hyalinization and amyloid-like material. The presence of numerous plasma cells in the plasma cell variant of multicentric CD must be evaluated carefully to rule out extranodal plasmacytoma by assessing light chain kappa, lambda, and immunoglobins [8]. The identification of CD on FNA is a diagnostic challenge however, certain cytomorphological features are helpful in difficult cases. These are the presence of aggregated clusters of small lymphocytes, and fragments of capillaries with or without hyalinized walls, large cells with ill-defined cytoplasmic outlines, and large irregular nuclei with inconspicuous nucleoli. The presence of plasma cells accompanied by the FDCs and capillary fragments point towards a diagnosis of a mixed type of CD. The features which are observed by the authors must be analyzed in large studies to determine if they could in any way help in reducing the diagnostic dilemma.

CONCLUSION

A definitive diagnosis of CD on cytology requires a high index of suspicion and awareness on the part of cytopathologists. Our experience with this case reiterates the fact that for a lymph node lesion, histopathological examination of an entire node is essential to arrive at an accurate diagnosis and differentiate it from its impersonators. Extranodal sites aspiration cytology smears showing follicular dendritic cells along with proliferating germinal centres must be screened carefully. Histopathological correlation is must to rule out Hodgkins Lymphoma and other entities.

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