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Fine Needle Aspiration Cytology of Kikuchi-Fujimoto Disease

Adhikari RC[1]

[1]Department of Pathology, Tribhuvan University Teaching Hospital, Maharajgunj, Kathmandu, Nepal.

ABSTRACT

Background: Kikuchi-Fujimoto disease is an acute onset febrile illness of unknown etiology, predominantly affecting young women with predilection for cervical lymphadenopathy.

Methods: The study included 13 cases of Kikuchi-Fujimoto disease with both fine needle aspiration cytology and excisional biopsy of lymph node available and data & slides were retrieved from the department of Pathology, Tribhuvan University Teaching Hospital and Om Hospital & Research Centre Pvt. Ltd., Kathmandu, Nepal from August 2009 to July 2013.

Results: The mean age of the patients was 27.6 years with a range of 17 to 38 years. Twelve of 13 patients had cervical lymphadenopathy. Cytomorphological features included cellularity, karyorrhectic debris, crescentichistiocytes, necrosis and cellular polymorphism. Histologically, Lymph nodes showed partially effaced architecture by paracortical pale foci with karyorrhectic debris. These foci were composed of phagocytic & non-phagocytic histiocytes, plasmacytoid monocytes, immunoblasts and lymphocytes.

Conclusions: Kikuchi-Fujimoto disease, in most cases, can be diagnosed cytologically on the basis of identification of karyorrhectic debris and crescentic macrophages with reactive background.

Keywords: fine needle aspiration cytology, Kikuchi-Fujimoto disease, lymph node.

INTRODUCTION

Kikuchi-Fujimoto disease (KFD) was first described in 1972 simultaneously by Kikuchi[1] and Fujimoto and colleagues.[2] It is characterized by acute onset febrile illness and lymphadenopathy, predominantly affecting young women with predilection for cervical lymphadenopathy. Despite many studies, the etiology of this disease remains unclear. The diagnosis of KFD is made on histological examination of excised lymph node.

The experience with Fine Needle Aspiration cytology (FNAC) technique to diagnose KFD is limited to either case reports or small series.[3-6] Fine needle aspiration cytology findings in 13 histopathologically proven cases of KFD is presented here.

METHODS

Thirteen cases of KFD with both FNAC and excisional biopsy of lymph node were retrieved from the department of Pathology, Tribhuvan University Teaching Hospital and Om Hospital & Research Centre Pvt. Ltd., Kathmandu, Nepal from August 2009 to July 2013. The cytological smears were reviewed retrospectively from these 13 cases with histological diagnosis of KFD.

All aspirates were performed prior to biopsy using 21 gauzed needle and air dried & wet fixed smears were prepared for Giemsa stain and H&E stain respectively. All excised lymph nodes were routinely processed and H&E staining was performed.

Correspondence: Ram Chandra Adhikari, Department of Pathology, Om Hospital & Research Centre, Chabhil, Kathmandu, Nepal. E-mail: rcadhikari@hotmail.com, Phone: 9851054411.

RESULTS

The clinical details of all 13 cases are summarized in Table 1.

Table 1. Clinical features of Patients with KFD.

Case no.	Age (Yr)	Sex	Clinical feature	Cytological diagnosis	Lymph node aspirated
1	25	M	Fever & cervical lymphadenopathy for last 3 weeks	Tuberculosis	Right cervical lymph node, III
2	28	F	Cervical lymphadenopathy for last 3 months	Tuberculosis	Right cervical lymph node, V
3	27	F	Axillary lymphadenopathy	Reactive lymphadenitis	Right axillary lymph node
4	28	F	Low grade fever & enlarged left cervical lymphnode	Kikuchi-Fujimoto disease	Left cervical lymph node, supraclavicular
5	24	F	Left sided neck swelling	Kikuchi-Fujimoto disease	Left cervical lymph node, II
6	30	F	Bilateral cervical lympha-denopathy for 2 months	Non-Hodgkin lymphoma	Left cervical lymph node, IV
7	28	F	Matted tender cervical lymph node for last 15 days; On & off fever	Kikuchi-Fujimoto disease	Left cervical lymph node, II & III
8	28	F	Enlarged right cervical lymph noode, 2x1.5 cm sized	Kikuchi-Fujimoto disease	Right cervical lymph node, supraclavicular
9	38	F	Fever with cervical lymphadenopathy for 15 days	Kikuchi-Fujimoto disease	Right cervical lymph node, III
10	17	F	Enlarged right cervical lymph node for 3 months	Kikuchi-Fujimoto disease	Right cervical lymph node, II
11	23	F	Multiple nodular swelling, neck for 2 months	Kikuchi-Fujimoto disease	Left cervical lymph node, II,III
12	35	F	Tender cervical lymph node for 10 days	Kikuchi-Fujimoto disease	Right cervical lymph node, II & III
13	28	F	Cervical lymphadenopathy	Kikuchi-Fujimoto disease	Right cervical lymph node, III & IV

Twelve of 13 patients were female. The mean age of the patients was 27.6 years with a range of 17 to 38 years. Twelve of 13 patients had cervical lymphadenopathy, while one had axillary lymphadenopathy. Most of the cases were clinically suspected as tuberculosis. In all cases, FNAC was followed by excisional biopsy.

Cytomorphological features are tabulated in Table 2. Special attentions were given on: cellularity, karyorrhectic debris, crescentic histiocytes, necrosis and cellular polymorphism. Hypercellularity and karyorrhectic debris were seen in all cases and karyorrhectic debris (Figure 1) were intracellular as well as extracellular. Crescentic histiocytes (Figure 2) were prominent findings in 10 cases only. These histiocytes have nuclear debris in their cytoplasm and eccentric crescent shaped nucleus. Necrosis (Figure 3) was seen only in three cases. In 12 of 13 cases, a polymorphous lymphoid population (Figure 4) of small lymphocytes, plasmacytoid lymphocytes and large immunoblastic cells were observed. No granulomas or epithelioid cells and neutrophils were observed.

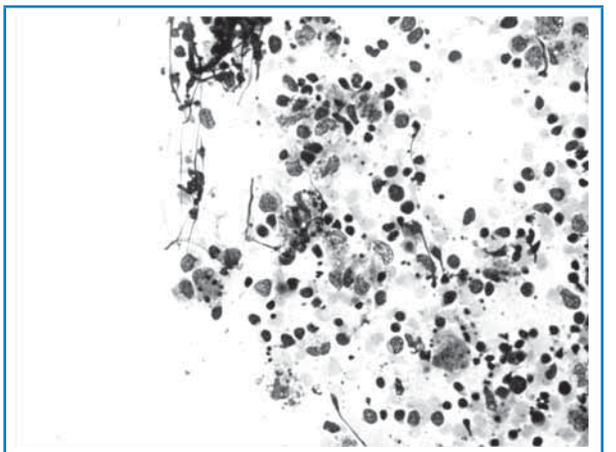

Figure 1. FNAC, Scattered intracellular and extracellular karyorrhectic debris. Giemsa stain, X200.

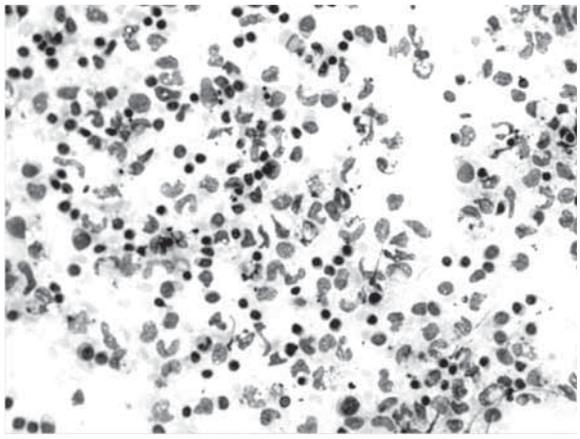

Figure 2. FNAC lymphnode, Scatteredcrescentichistiocytes. Giemsa stain, X400.

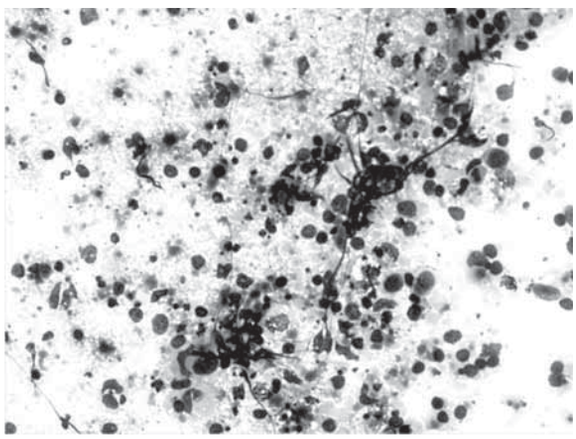

Figure 3. FNAC, Necrosis. Giemsa stain, X400.

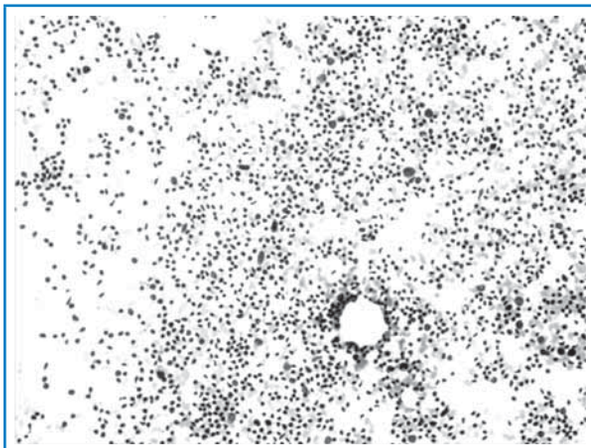

Figure 4. FNAC, Polymorphous lymphoid population, Giemsa stain, X40.

Table 2. Cytomorphological features.

Morphological features	No. of cases (%)
Hypercellularity	13 (100)
Cellular polymorphism	12 (92)
Karyorrhectic debris	13 (100)
Crescentic histiocytes	10 (77)
Absence of neutrophils	13 (100)
Necrosis	3 (23)
Granulomas	-

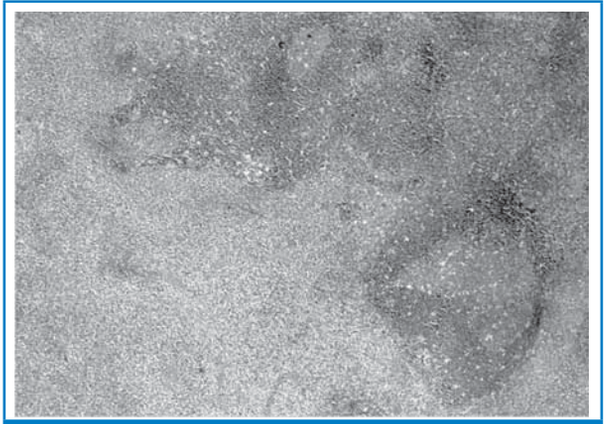

Figure 5. Lymphnode biopsy, Paracortical pale focus (below), H&E stain, X100.

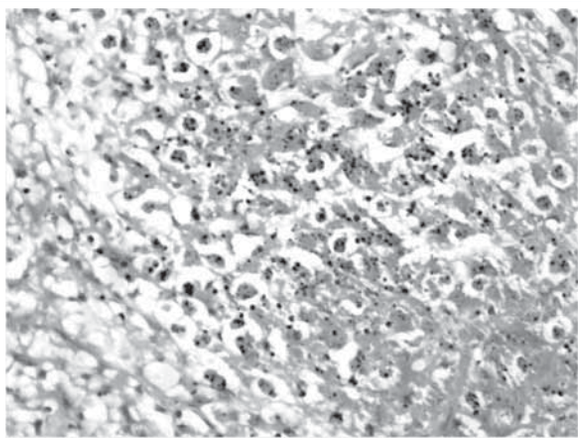

Figure 6. Lymphnode biopsy, Apoptosis with karyorrhectic debris, H&E stain, X400.

The largest of the submitted lymph nodes measured 3 cm. All lymph nodes showed partially effaced architecture by paracortical pale foci (Figure 5) with karyorrhectic debris (Figure 6). These pale foci were composed of phagocytic & non-phagocytic histiocytes, plasmacytoid monocytes, immunoblasts and lymphocytes. Some of these histiocytes were crescentic. Neutrophils and eosinophils were not found. Small multiple foci of necrosis were seen in seven cases, while large area of

apoptosis was seen in three cases (Figure 6). Focally preserved lymphoid follicles were seen in seven cases. None of the lymph nodes showed granulomas.

DISCUSSION

The role of FNAC has been established in the diagnosis of reactive as well as neoplastic disorders of the lymph node. KFD is one of the lymph node disorders, which have a characteristic histological finding and cytomorphological picture. This study is one of the series of KFD diagnosed on cytological material in most of the cases with subsequent histological confirmation.

The diagnosis of KFD is possible given an adequately sampled, well-prepared specimen in which characteristic karyorrhectic debris with admixed crescentic macrophages on a reactive background are evident.[3] In this study, karyorrhectic debris, crescentic macrophages and reactive background are found in most of the cases on retrospective examination of the smears.

In one case (case no. 3), because of paucity of necrosis, crescentic macrophages & karyorrhectic debris, the diagnosis of reactive lymphadenitis was made cytologically. However, review of smears showed little karyorrhectic debris. In addition, all cases lack neutrophils, granulomas or epithelioid cells. Karyorrhectic debris are common findings and they were both intracellular and extracellular. These debris with reactive background may be seen in lupus lymphadenitis and these two diseases are indistinguishable cytologically.[5] Some authors claim that KFD may be a self liming form of systemic lupus erythematosus.[7-10] Crescentic macrophages have eccentrically placed crescent shaped nucleus and abundant cytoplasm with debris in some of them.

The background was reactive with polymorphism in 12 out of 13 cases in this study, while one case showed monotonous population of lymphoid cells mimicking Non-Hodgkin lymphoma, so the original cytological diagnosis was Non-Hodgkin lymphoma. However, the review of cytological smears revealed little karyorrhectic debris. These debris sometimes may be considered secondary to probable tumor and may be a cause of false positive diagnosis on cytology[4] as well as a diagnostic problem histologically.[11,12]

The another differential diagnosis based on clinical finding is tuberculosis in regions where it is more prevalent.[11,13] However, tuberculous lymphadenitis and KFD can easily be distinguished on cytological preparations as well as histologically. The epithelioid cell granulomas seen in tuberculosis are not a feature of KFD. However, the diagnosis of tuberculosis was suspected cytologically in two cases in this study because of abundant necrosis that had caseous appearance. The retrospective review of cytological smears in these cases showed few crescentic macrophages and even little debris.

Kuo TT proposed three histological phases of KFD: proliferative, necrotizing and xanthomatous.[14] The proliferative phase is characterized by presence of histiocytes, plasmacytoid monocytes, transformed monocytes, transformed lymphocytes, karyorrhectic nuclear fragments and apoptotic debris. The necrotic phase is defined by the presence of non-suppurative coagulative necrosis. If foamy histiocytes predominate in the lesions, the case is categorized as being in the xanthomatous phase despite the presence or absence of necrosis. The cytological finding also depends on these phases. When FNAC reveals mixed background with karyorrhectic debris, this probably denotes proliferative phase. The presence of abundant necrosis on cytological smears indicate necrotic phase and the presence of numerous crescentic macrophages favors xanthomatous phase.

CONCLUSIONS

Kikuchi-Fujimoto disease, in most cases, can be diagnosed cytologically on the basis of identification of karyorrhectic debris and crescentic macrophages with reactive background in the adequate clinical context (young female with cervical lymphadenopathy).

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