

# Cystic Hygroma: Cytological and Radiological Co-Relation

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## ABSTRACT

**Aim:** The aim of this study is to illustrate and discuss the pathological spectrum of radiologically diagnosed “possibility of cystic hygroma” as there is severe paucity of literature regarding this. Our purpose is to differentiate cystic hygromas from other cystic lesions like branchial cysts especially when cystic hygromas present at an unusual site and unusual age.

**Materials and Methods:** Total of 20 cases of radiologically diagnosed as “possibility of cystic hygroma” were aspirated using 23 guage needle. Appearance and amount of fluid aspirated was recorded and then centrifuged. Wet fixed & air dried smears were made from the sediment and were stained with Papanicolaou (Pap) stain, Haematoxylin & Eosin (H&E) stain and Giemsa stain.

**Results:** Cytological analysis was rendered on all the 20 cases, out of which 15 cases were diagnosed as cystic hygroma. Rest

of the 5 cases were diagnosed as branchial cleft cyst (2 cases), laryngocele (2 cases) and non-conclusive (1 case). Out of 20 aspirates, 10 aspirates (50.0%) were from the posterior triangle of the neck, 4 aspirates (20.0%) were from the middle triangle of the neck and 4 aspirates (20.0%) were from the anterior triangle of the neck. One (5.0%) of the aspirate was from the mediastinum and one (5.0%) aspirate was from the axilla. Histopathological correlation was available for 2 of these patients and both of these were diagnosed as cystic hygroma.

**Conclusion:** Fine Needle Aspiration Cytology (FNAC) along with radiological correlation serves as a highly effective and efficient modality for the confident diagnosis of cystic hygroma especially in patients with atypical presentation, age and location. It provides a safe alternative to more cumbersome and time consuming surgical modalities of diagnosis.

**Key Words:** FNAC, Cystic hygroma, Lymphatic malformations

## INTRODUCTION

Cystic hygromas are fluid-filled sacs that result from blockage in the lymphatic system. Cystic hygromas are single or multiple cysts found mostly in the neck region. A cystic hygroma can be present as a birth defect (congenital) or develop at any time during a person's life.

A cystic hygroma in a developing baby can progress to hydrops and eventually foetal death. Some cases of congenital cystic hygromas resolve leading to webbed neck, edema and a lymphangioma. The cystic swelling is clinically brilliantly transilluminant and is filled with clear lymphatic fluid. It gets recurrently infected because of its lymphoid content. Rarely, it is seen in axilla and groin. FNAC along with radiological correlation serves as a highly effective and efficient modality for the confident diagnosis of cystic hygroma especially in patients with atypical presentation, age and location. Treatment is excision.

## MATERIALS AND METHODS

The study was conducted on 20 patients who was presented in the Pathology department in a tertiary care hospital. All the patients were subjected to detailed clinical examination prior to FNAC. Relevant investigations were carried out as per requirements. Radiological investigations were studied and noted. After a brief explanation of the technique, an informed consent was obtained. FNAC of the lesion was done using 23 guage needle fitted to a 10ml syringe. After stretching the skin, the needle was pierced into the lesion. The plunger was then withdrawn and the contents

were aspirated. Appearance and amount of cyst fluid/material was recorded. Smears were made, fixed in 95% alcohol and air dried and then stained using Pap stain, H&E stain and Giemsa stain. Those patients in whom FNAC results were inconclusive were reassessed with biopsy. Biopsy was taken under local or general anaesthesia and the specimens were examined by a histopathologist.

## RESULTS

Majority of patients with cystic hygroma presented in first to second decade of life. The most common presenting feature was a soft fluctuant swelling in the neck (90.0%), mediastinum (5.0%) and axilla (5.0%) region. USG/CT enabled an assessment of the type of lesion, size, location and thus augmented the cytological diagnosis of the case.

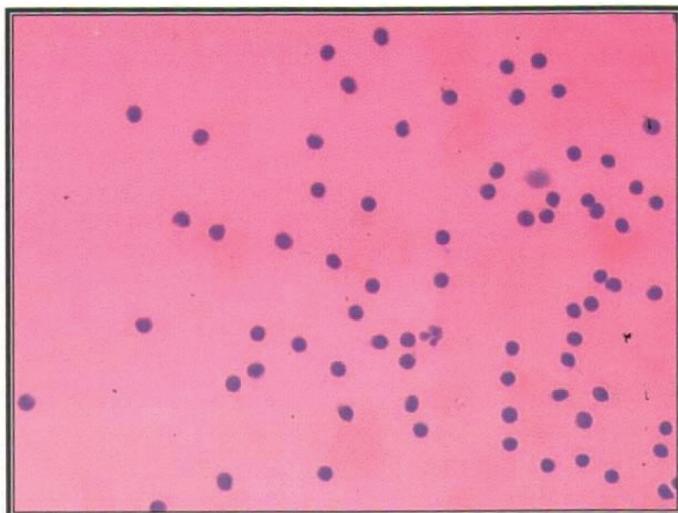
Out of total 20 cases which were radiologically diagnosed as “possibility of cystic hygroma” 15 cases were confidently diagnosed as cystic hygroma on FNAC. Rests of the 5 cases were diagnosed as branchial cleft cyst (2 cases), laryngocele (2 cases) and non-conclusive (1 case).

Age group of patients studied ranged from 2.5 months to 75 years with the median age of 5 years. Majority of the patients were females with female to male ratio of 2:1.

Out of 20 aspirates, 10 aspirates (50.0%) were from the posterior triangle of the neck, 4 aspirates (20.0%) were from the middle triangle of the neck and 4 aspirates (20.0%) were from the anterior triangle of the neck. One of the aspirates (5.0%) was from the

S.No.	Site	Number of cases	Percentage
1	Posterior triangle neck	10	50.00
2	Middle triangle neck	4	20.00
3	Anterior triangle neck	4	20.00
4	Mediastinum	1	5.00
5	Axilla	1	5.00
	Total number of cases	20	100.00

[Table/Fig-1]: Showing incidence of sites of lesional swellings



[Table/Fig-2]: Smear showing mature lymphoid cells in proteinaceous background (Giemsa stain 400x)

mediastinum and one aspirate (5.0%) was from the axilla [Table/Fig-1].

Fluid aspirated was watery clear in 14 (70%) aspirates, milky in 4 (20.0%) aspirates and blood tinged in 2 (10.0%) aspirates. The amount of aspirated fluid varied from 1ml to 30ml [Table/Fig-2].

Cytology revealed endothelial cells in 10 aspirates. Lymphoid cells were seen in 17 aspirates. Cholesterol crystals were observed in 10 aspirates. Background had proteinaceous material in 15 aspirates. Red blood cells were seen in 2 aspirates [Table/Fig-3].

Biopsy was available for 2 of these cases and both of these were diagnosed histologically as cystic hygroma. Macroscopically, these lesions were unencapsulated, with variably sized internal cavities and watery contents. Histologically, sections showed thin walled dilated channels few of which contained eosinophilic lymphatic material. The dilated spaces were lined by flattened endothelium [Table/Fig-4].

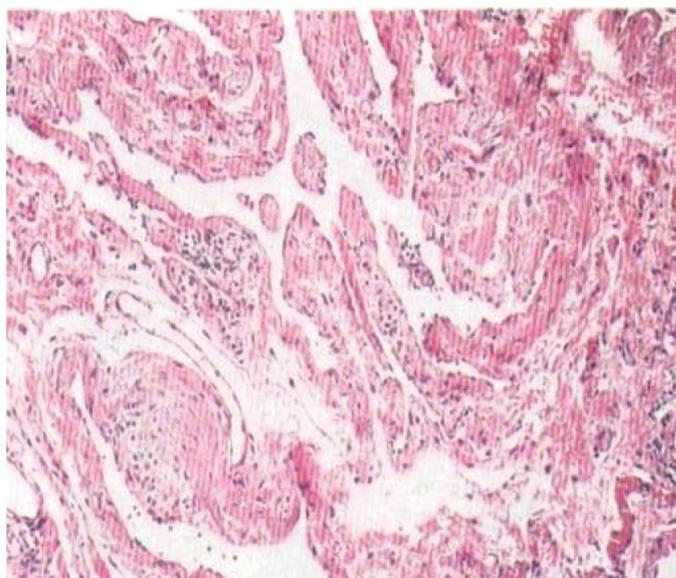
## DISCUSSION

After years of diagnostic discipline being centered on histopathology, FNAC has arisen as a parallel modality, which subserves both screening and predictive function. The clinical value of FNAC is not limited to neoplastic conditions. It is also of value in the diagnosis of inflammatory, infectious and degenerative conditions, in which samples can be used for microbiological and biochemical analysis in addition to cytological preparations.

This study deals with the utility and the role of FNAC in diagnosis of radiologically suspected cases of cystic hygroma. Histopathological correlation was done where ever possible. It is a 5 year retrospective study and it formed one of the rare cases presenting in the Cytology section accounting to 0.05% of total aspirations done in these 5 years. Lymphatic malformations are primarily diagnosed in

S.No.	Cytological features	Number of cases
1	Endothelial cells	10
2	Lymphoid cells	17
3	Cholesterol crystals	10
4	Proteinaceous material	15
5	Red blood cells	2

[Table/Fig-3]: Showing cytological features in cystic hygroma



[Table/Fig-4]: Section shows dilated lymphatic channels and lymphocytes (H&E 100x)

children and are uncommon in adults. Presence of cystic hygroma in adults in few cases makes the present study more unique and interesting. Cystic lesions that represent lymphangiomas may be seen in the anterior, middle, and posterior mediastinum as well as the soft tissues of the neck, usually in pediatric patients [1-6]. The most common site for cystic lesion is neck. Mediastinum and axilla forms one of the rare sites for it. In the present study patient with cystic hygroma in the mediastinum presented clinically with a vague symptom of chest discomfort and got a chest X-ray done. X-ray revealed a well defined soft tissue opacity with sharp lateral borders not silhouetting the cardia. CT guided FNAC was done for it. Radiological and cytological correlation enabled a confident diagnosis of cystic hygroma in the anterior mediastinum. In the present study the axillary lesion presented as a soft swelling clinically diagnosed as lipoma but on ultrasound a suspicion for cystic hygroma was raised which was later confirmed on FNAC. None of the lesions in the present study showed features of inflammation.

Cystic hygroma and lymphangioma represent the two ends of the spectrum of histologic classification of lymphatic lesions. These lymphatic lesions may be divided into three morphologic types: Capillary (lymphangioma circumscriptum), Cavernous (lymphangioma cavernosum) and Cystic (cystic hygroma). These lesions are thought to arise from sequestration of portions of the primitive embryonic anlage or as areas of localized lymphatic stasis caused by congenital blockage of regional lymphatic drainage [7]. Lymphangioma circumscriptum can develop at any age and has occasionally been seen after radiation therapy. It often presents in the form of grouped popular lesions, occasionally verruciform and often has the appearance of deep-seated vesicles [8].

Clinically, 80% - 90% of these lesions are detected by the time the

patient is 2 years old. A few cases however, have been reported in adults who are primarily in the fourth and fifth decades of life. This was in accordance with the present study in which 80% of the patients with cystic hygroma were below 12 years and 20% patients were above 12 years. Most often these cystic hygromas are discovered as painless soft or semifirm masses in the neck, almost always in the posterior triangle [9]. The most common site for cystic hygroma in the present study was also posterior triangle accounting to 50.0% cases.

Fluid aspirated from cystic hygroma was watery clear in majority of cases and milky to haemorrhagic in few cases.

FNAC smears of fluid aspirated from a cystic hygroma contained cholesterol crystals, lymphoid cells mainly small lymphocytes in variable number and endothelial cells [10]. These findings correlate with the present study which showed lymphoid cells in 85% cases, endothelial cells in 50% cases, cholesterol crystals in 50% cases, proteinaceous background in 75% cases and red blood cells in 10% cases.

Histologic correlation was available for 2 of these patients and both of these were diagnosed as cystic hygroma.

## CONCLUSION

Cystic hygroma is uncommonly seen in clinical practice. To add on, paucity of literature and atypical presentation pose a diagnostic difficulty. Soft fluctuant masses are often diagnosed clinically as cysts, and these lesions are a common source of erroneous diagnosis, because of sparse cellularity in the aspirates. Radio-pathological correlation is of paramount importance when reporting

on cystic hygromas. FNAC is one of the diagnostic techniques that is often requested. FNAC is a rapid, convenient and accurate method of diagnosis that can be done on an outpatient basis. The procedure is safe and free from complications and is well tolerated by the patients. Diagnostic efficacy can further be improved when combined with imaging techniques like ultrasound and computerized topography scans.

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### DECLARATION ON COMPETING INTERESTS:

No competing Interests.

Date of Submission: **May 14, 2011**

Date of peer review: **Jul 14, 2011**

Date of acceptance: **Aug 30, 2011**

Online first: **Sep 10, 2011**

Date of Publishing: **Oct 05, 2011**