

A Study on Clinicopathological Profile of Paediatric Cervical Lymphadenopathy in a Tertiary Care Hospital in the Kumaun Region of Uttarakhand

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ABSTRACT

BACKGROUND

Cervical lymphadenopathy is a common and usually benign finding especially in the paediatric age group. A thorough history and physical examination are necessary to establish a clinical diagnosis. This study was conducted to provide a clinical and pathological profile of cervical lymphadenopathy in the paediatric population visiting the tertiary care hospital in the Kumaun region of Uttarakhand.

METHODS

Particulars of the patients, relevant clinical history, routine blood investigation and radiological and histopathological findings were recorded in the clinical proforma after taking proper informed consent. Patients were initially given antibiotics for 1 week and observed for signs of clinical improvement of suspected infectious adenopathy. On follow-up, if there were no signs of improvement, the differential diagnosis was considered and FNAC of the cervical lymph nodes was performed. Data was analysed for clinical information such as age, sex, presenting symptoms and signs and FNAC findings.

RESULTS

In our study of 320 patients, 164 were males and 156 were females. Majority of the patients belonged to the age group of 11-15 years in both male (n=137; 83.5%) and female (n=140; 89.7%) patients. Most commonly involved subgroup of cervical lymph nodes was posterior group (n=267; 83.4%) followed by submandibular group (n=258; 80.6%). Most common symptom observed in the study was fever (n=242; 75.6%) followed by cough (n=194; 60.6%). Most common sign observed in the study was lymph node mobility (n=315; 98.4%) followed by tenderness (n=291; 90.9%). On follow-up, 45 patients (n=14.1%) responded to 1 week antibiotics course and showed signs of resolution. Remaining 275 patients (85.6%), were taken up for FNAC of the cervical lymph nodes. Most common FNAC finding was reactive adenitis (n=221; 80.3%). Other findings included tubercular lymphadenitis (n=21; 7.6%) and Hodgkin lymphoma (n=2; 0.7%). Out of 275 FNAC done, 31 reports (11.2%) were inconclusive.

CONCLUSIONS

Cervical lymphadenopathy is quite common in childhood. Majority cases are usually infective in origin and usually self-limiting. Children with cervical lymphadenopathy not showing any improvement on initial antibiotic therapy should be evaluated for other causes.

KEY WORDS

Cervical, Lymphadenopathy, Paediatric, Lymph Node.

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BACKGROUND

Lymph nodes are an important part of lymphatic system which is responsible for maintaining the immune system of the body. Lymph nodes filter the lymph in nodal sinuses. About 8 litres of lymph is produced daily, concentrated to 5 litres in the lymph nodes and returned to venous circulation. Macromolecules like albumin, globulin, fibrinogen, foreign particles and microbes are filtered & removed. Lymph nodes enlarge due to proliferation of cells, normal or abnormal as a result of infection or inflammation. This enlargement can be a result of reactive or pathologic process. Lymphadenopathy is defined as an enlargement or a change in the character of a lymph node. Pathologic lymphadenopathy is usually a symptom of infectious, non-infectious conditions, or, in rare cases, malignant disease. Lymphadenopathy, especially cervical lymphadenopathy, is quite common in childhood, with a reported prevalence of 28% to 55% in otherwise normal infants and children. [1,2] In addition, children have palpable nodes in most of the superficial lymphatic basins, including cervical, axillary, and inguinal regions that are non-pathologic; there is progressive increase in lymphoid mass from birth until early adolescence. This lymphoid tissue then normally diminishes throughout puberty.

Many lymph nodes are palpable in children, and generally, cervical nodes less than 2 cm, axillary nodes less than 1 cm, and inguinal nodes less than 1.5 cm are considered physiologic in young children.[3] Depending on palpatory findings, lymph nodes give a clue to the disease or the pathologic process. Therefore, the lymph node assessment is a very essential part of clinical examination. Once a child is referred to a surgeon, important historical questions include duration, progression, location, and associated symptoms, such as pain, fever, weight loss, and night sweats. Additional clinical information includes recent illnesses, especially upper respiratory tract symptoms, infections, trauma, bites, and dental problems. Recent immunizations, especially BCG should be evaluated. Social history, including recent travel, animal exposure, and exposure to tuberculosis and tropical diseases should be sought.

The primary goal of a consulting surgeon is to determine the need for a tissue diagnosis. A key consideration is to resolve the family's fears of malignancy in an efficient and cost-effective manner. Most lymphadenopathy is benign in nature and is generally associated with a short duration of symptoms. Generalized lymphadenopathy is defined as enlargement of more than two non-contiguous lymph node groups. A thorough history and physical examination usually help separate local from generalized processes and help guide further evaluation, including laboratory and radiologic evaluation. Fine-needle aspiration and culture of a lymph node is a safe and reliable procedure to isolate the causative organism and to determine the appropriate antibiotic when bacterial infection is the cause.[4] All aspirated material should be sent for both gram and acid-fast stain and cultures for aerobic and anaerobic bacteria, mycobacteria, and fungi.[5] If the gram stain is positive, only bacterial cultures are mandatory.

Objectives

1. To provide a clinical and pathological profile of cervical lymphadenopathy in the paediatric population visiting

the tertiary care hospital in the Kumaun region of Uttarakhand.

2. To study and establish different age groups and gender of patients with cervical lymphadenopathy.
3. To study the clinical presentation of cervical lymphadenopathy.
4. To study the various causes of cervical lymphadenopathy.

METHODS

This hospital based observational cross-sectional study included the subjects in the age group of 11-19 years visiting the outpatient clinics of surgery and ENT department with cervical lymph node enlargement. The data of 320 patients collected from January 2014 to December 2019 was analysed and studied. The sampling method used was convenient sampling.

Patients with the diagnosis of cervical lymphadenopathy were enrolled in the study. A thorough history of the child was taken from the child and parents. Presenting symptoms were reviewed and complete physical examination of whole body was done and the findings were recorded. Special attention was paid to the cervical lymph nodes examination. Suspicious findings were advised for further investigations like complete blood count, chest radiography, ultrasonography, sputum examination & FNAC or biopsy.

All particulars of patients, relevant clinical history, all routine blood investigation and radiological and histopathological findings were recorded in the clinical proforma after taking proper informed consent. Patients were initially given antibiotics for 1 week and observed for signs of clinical improvement of suspected infectious adenopathy. On follow-up, if there were no signs of improvement, the differential diagnosis was considered and FNAC of the cervical lymph nodes was performed. Data was analysed for clinical information such as age, sex, presenting symptoms and signs and FNAC findings.

Statistical Analysis

Statistical testing was conducted with the statistical package for the social science system version SPSS 17.0. Continuous variables are presented as mean $\pm$ SD, and categorical variables were presented as absolute numbers and percentage. Tables were created using MS Excel 2021.

RESULTS

	Sex		Total
	F	M	
Age (in years)	11	12	21
	12	44	34
	13	33	28
	14	14	29
	15	34	28
	16	8	4
	17	6	8
	18	9	2
	19	4	2
Total	164	156	320
N=320			

Table 1. Age and Sex Distribution

Enlarged cervical lymph nodes were most common in children of 12 years of age (n=78; 24.37%) more common in females (F:M=44:34). There was no correlation between age and sex distribution of the children with cervical lymphadenopathy as seen in overall distribution of the cases.

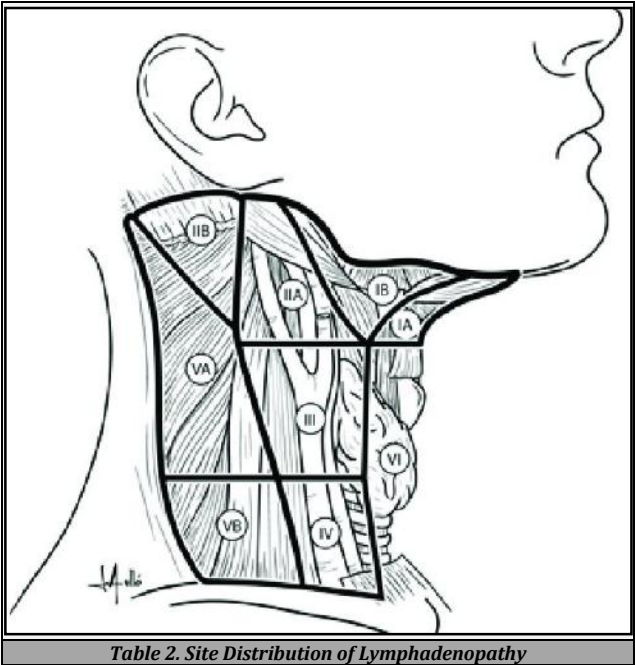


Table 2. Site Distribution of Lymphadenopathy

Site	Bilateral	Left	Right	Total
Anterior	19	35	17	71
Posterior	63	85	119	267
Submandibular	57	63	138	258
Submental	21	35	62	118
Posterior auricular	12	14	43	69
Supraclavicular	13	18	13	44

N=320

Size (in cms)	Frequency	Percent
2	184	57.5
3	129	40.3
4	4	1.3
5	2	.6
6	1	.3
Total	320	100.0

N=320

Table 3. Size Distribution of Cervical Lymphadenopathy

Symptoms and Signs	Frequency	Percent
Fever	242	75.6
Sore throat	94	29.4
Cough	194	60.6
Fatigue	185	57.8
Arthralgia	15	4.7
Weight loss	154	48.1
Tenderness	291	90.9
Erythema	244	76.3
Warmth	242	75.6
Mobility	315	98.4
Matting	18	5.6
Fluctuation	22	6.9

N=320

Table 4. Distribution of Clinical Features

Most of the lymph nodes were 2 cm in size (n=184; 57.5%) followed by 3 cm (n=129; 40.3%). Overall, there was an inverse relation between size & number of children with cervical lymph node enlargement.

Fever was the most common presenting symptom (n=242; 75.6%) followed by cough & fatigue. Cervical lymph node tenderness was the most common finding on clinical examination followed by warmth i.e., inflammation of the lymph nodes was the most common clinical feature. Most of

the lymph nodes were mobile (n=315; 98.4%), matted lymph nodes were detected in 18 cases (5.6%) and fluctuation was seen in 22 cases (6.9%). 48.1% children reported to have lost weight. Only few children (n=15; 4.7%) had joint pain (arthralgia).

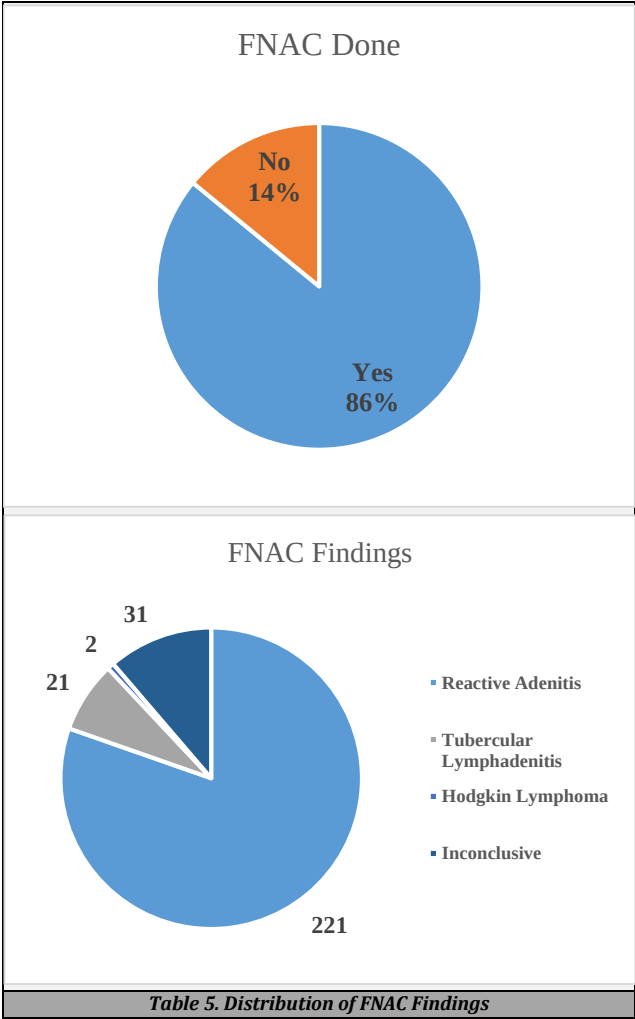


Table 5. Distribution of FNAC Findings

Most of the children with cervical lymph node enlargement required fine needle aspiration cytology or biopsy for further confirmation of the diagnosis (86%). Only 14% of the subjects did not require FNAC for further confirmation of diagnosis. Of the 275 patients in whom FNAC was performed, the most common finding was reactive adenitis (n=221; 80.36%). In 31 patients (11.27%), FNAC findings were inconclusive.

DISCUSSION

Cervical lymphadenopathy in children is so common and frequent that there is no standard measure to report the exact incidence and prevalence at one place or at one time. More than one third of normal healthy children will have enlarged cervical lymph nodes palpable on clinical examination.

In our study of 320 patients, 164 were males and 156 were females. Majority of the patients belonged to the age group of 11-15 years in both male (n=137; 83.5%) and female (n=140; 89.7%) patients. Mean age group of patients in the study was 13.64 years. Assessment of a child with cervical lymphadenitis includes history and examination. History of onset, duration,

site, changes in the character of swelling, restriction of neck movements, fever, weight loss, cough, trauma, night sweats, other swellings, infection & inflammation in head, neck, oropharynx, change in voice are very important. [6,7] Exposure to diseased contacts, animals & allergies. Examination of all the systems & parts is important as lymph is drained to the neck nodes form almost all parts of the body. Examination of the neck regarding location, size, character, signs of inflammation, laterality and number of lymph nodes is important. [8] Certain features of lymph nodes on palpation are indicators of specific pathology and are helpful for planning further approach in the diagnosis. [9]

Size of cervical lymph nodes encountered in the study ranged between 2-6 cm with most common size being 2 cm (n=184; 57.5%) followed by 3 cm (n=129; 40.3%). Mean size of lymphadenopathy was found to be 2.46 cm. Most commonly involved subgroup of cervical lymph nodes was posterior group (n=267; 83.4%) followed by submandibular group (n=258; 80.6%). Most patients had involvement of multiple groups of lymph nodes (n=306; 95.6%). Most common symptom observed in the study was fever (n=242; 75.6%) followed by cough (n=194; 60.6%). Other symptoms seen in the patients were fatigue, weight loss, sore throat and arthralgia. Most common sign observed in the study was lymph node mobility (n=315; 98.4%) followed by tenderness (n=291; 90.9%). Other examination findings observed included warmth, erythema, fluctuation and matting. On palpation, most lymph nodes were soft in consistency (n=250; 78.1%) followed by firm consistency (n=69; 21.6%). Only 1 patient (0.3%) was found to have hard consistency of lymphadenopathy. Complete assessment after history & physical examination directs further to the need of laboratory investigations, radiological & cytologic or histopathologic examination of the patient. Complete blood count, peripheral blood smear, lactate dehydrogenase & uric acid are done. Serological examination & tuberculin tests are also required when directed by clinical examination. Chest radiography & ultrasonography of chest & abdomen may be required in selected cases. Evaluation of systemic disorders and antigen/antibody titres in case of specific infections is required.

All patients were initially given antibiotics for 1 week and observed for signs of clinical improvement of suspected infectious adenopathy. On follow-up, 45 patients (n=14.1%) showed signs of resolution. Remaining 275 patients (85.6%) showed no or minimal signs of clinical improvement and thus, were taken up for FNAC of the cervical lymph nodes. Most common FNAC finding was reactive adenitis (n=221; 80.3%). Other findings included tubercular lymphadenitis (n=21; 7.6%) and Hodgkin lymphoma (n=2; 0.7%). Out of 275 FNAC done, 31 reports (11.2%) were inconclusive. Enlarged lymph nodes in the neck are commonly benign in nature especially in children. Upper respiratory tract infection, mostly of viral aetiology is the most common cause for lymphadenitis. [10] Reactive lymphadenopathy persists for a long period. Children with benign reactive lymphadenopathy can be kept under observation.

Cervical lymphadenopathy is a common problem in children. [1,11] Mostly it represents a transient response to a benign infection, but occasionally it might herald the presence of a more serious illness as observed in this study. [12] Acute bilateral cervical lymphadenopathy usually is caused by a viral

upper respiratory tract infection or streptococcal pharyngitis. [13] Acute unilateral cervical lymphadenitis is caused by streptococcal or staphylococcal infection in 40-80% cases. Supraclavicular or posterior cervical lymphadenopathy carries a much higher risk for malignancies than does anterior cervical lymphadenopathy. [14] Generalized lymphadenopathy is often caused by a viral infection, and less frequently by malignancies, collagen vascular diseases, and medications. Laboratory tests are not necessary in the majority of children with cervical lymphadenopathy. Most cases of lymphadenopathy are self-limited and require no treatment. [15] The treatment of acute bacterial cervical lymphadenitis without a known primary source should provide adequate coverage for both *Staphylococcus aureus* and group A β -haemolytic streptococci. [16,17] Lymph node biopsy is preferred for the definitive diagnosis but acceptance is low and diagnostic yield is 40-60% because of sampling errors, tissue handling etc. FNAC and Trucut biopsy are better accepted and yield similar results, therefore are more popular in obtaining cytological/histological diagnosis.

CONCLUSIONS

Cervical lymphadenopathy is a common and usually benign finding especially in the paediatric age group. A thorough history and physical examination is necessary to establish a clinical diagnosis. Children with cervical lymphadenopathy not showing any improvement on initial antibiotic therapy should be evaluated for other causes. Reactive lymphadenitis is the most common cytologic finding. Tubercular lymphadenitis in paediatric subjects need to be studied as a separate entity.

Limitations

Study is limited by its small sample size, an age-adjusted large multicentric study would be more informative. Another limitation is broader age group of the children, cervical lymphadenopathy in different age group differs according to the etiological factors. A particular age group is more prone to the common factors for benign cervical lymphadenopathy therefore different age groups need to be analysed separately. Cervical lymphadenopathy needs to be studied more specifically to set the standards globally.

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