

Original Article

Clinical presentation of congenital neck mass in children

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Abstract:

Background: Congenital neck mass is a very common problem in children in Otolaryngology & Head-Neck Surgery and Paediatric Surgery Department but data of our country is inadequate and there is lack of published study. This study will help to diagnose congenital neck masses, evaluate the success of surgical treatment in our country.

Objective: To assess the frequency of congenital neck mass in children and to see the clinical presentation of different congenital neck mass.

Study design: Cross sectional prospective study.

Place of study: Department of Otolaryngology – Head & Neck Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Dhaka Medical College Hospital (DMCH), Dhaka and Mymensingh Medical College Hospital (MMCH), Mymensingh.

Methodology: Patients below the age of 18 years with congenital neck mass who presented to three tertiary level hospitals from January 2010 to December 2010 were included in this study. Total thirty six patients were purposively selected. Age, gender, types of swelling and location were examined, investigations were done. Data was analyzed with SPSS software and was presented in the form of tables, diagrams and pie charts.

Results: 36 patients with different congenital neck swelling were examined. Out of 36 patients, thyroglossal cysts were commonest- 21(58.33%). Other congenital lesions were as follows: Branchial cyst 7(19.44), Lymphangioma 3(8.33%), Haemangioma 3(8.33%), Dermoid cyst 2(5.55%). Midline was most common location 21 (58.33%).

Conclusion: Congenital neck masses constitute important differential diagnosis for neck masses. These masses constitute diagnostic and therapeutic challenges for many clinicians. Correct diagnosis, safe and complete surgical excision requires sound knowledge of the location and extent of these masses.

Key words: *Congenital neck swelling, thyroglossal cyst, branchial cyst, dermoid cyst.*

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Introduction:

Congenital masses are the most common non-inflammatory neck mass¹. They result mainly from defective transformation of branchial arches and their derivatives. They constitute important differential diagnosis for neck masses. These masses constitute diagnostic and therapeutic challenges for many clinicians. Correct diagnosis, safe and complete surgical excision requires accurate knowledge of the location and extent of these masses². These masses are classified as lateral neck masses (including branchial cyst or fistula), midline neck masses (including thyroglossal duct cyst or fistula, thymic cyst, dermoid cyst, and teratoma of the neck), and masses of the entire neck (including haemangioma and lymphangioma)¹. These include, in descending order of frequency, thyroglossal duct cysts, branchial cleft anomalies, dermoid cysts, and median cervical clefts. The thyroglossal duct cyst is the commonest congenital neck mass, accounting for 70% of congenital neck anomalies and second common benign neck mass, after lymphadenopathy³. Branchial anomalies account for up to 17% of all paediatric cervical mass. Dermoid cysts account for up to 25% of midline cervical anomalies⁵. Approximately 7% of dermoid tumour occurs in the head and neck⁴. Lymphangioma are uncommon with only five cases per 3000 admission to a paediatric hospital and only account for four of 152 benign tumours of the neck⁶. Vascular lesions are among the commonest congenital neonatal abnormalities⁷.

Methods:

It was a cross sectional study. Patient below 18 years of age with congenital neck swelling admitted into 3 tertiary level hospitals in Department of Otolaryngology – Head Neck Surgery of Bangabandhu Sheikh Mujib

Medical University, Dhaka Medical College Hospital, Mymensingh Medical College Hospital from January 2010 to December 2010. Total 36 patients were purposively selected. Ethical approval was given by Bangladesh College of Physician and surgeons. Each child was examined thoroughly and appropriate investigation like ultrasonography, FNAC, radiological, histopathological examination was done. Data was analyzed using SPSS and are presented in the form of tables, diagram and pie chart.

Results:

Table-I

Age distribution of patient with congenital neck swelling (n=36)

Age group (in year)	Number of patient	Percentage (%)
0-2	3	8.33
2-4	3	8.33
4-6	6	16.67
6-8	10	27.78
8-10	4	11.11
10-12	2	5.56
12-14	3	8.33
14-16	3	8.33
16-18	2	5.56

Most of the patients are in 6-8 years group.

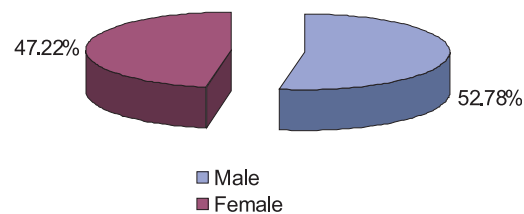


Figure-1: Sex distribution of patient with congenital neck swelling.

The figure above shows male predominance (52.78%) with a male-female ratio 1.11:1.

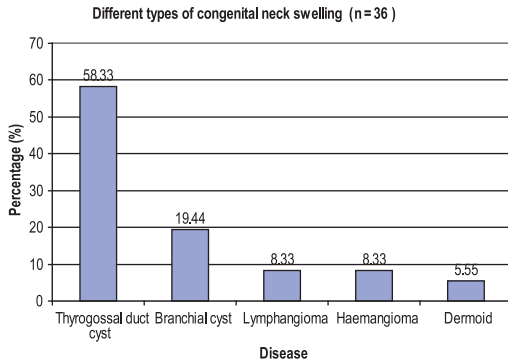


Figure 2: Different types of congenital neck swelling. The above figure shows thyroglossal duct cyst is the commonest congenital neck swelling (58.33%) followed by branchial cyst (19.44%).

Table II
Thyroglossal duct cyst: Age distribution (n=21)

Age group (in year)	Number of patient	Percentage (%)
2-4	2	9.52
4-6	5	23.80
6-8	8	38.08
8-10	4	19.04
12-14	1	4.76
16-18	1	4.76

Majority of the patient of thyroglossal duct cyst are within first decade, among them 6.1-8 age group is more common.

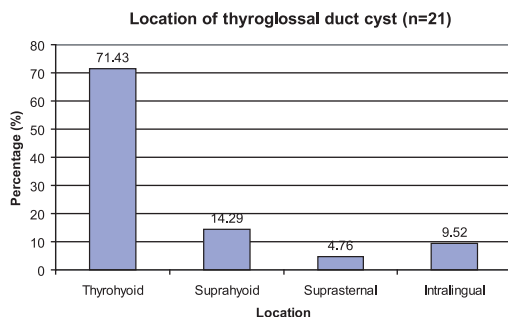


Figure 4: Location of thyroglossal duct cyst. In this series thyrohyoid thyroglossal duct cyst is common (71.43%) followed by suprahyoid (14.29%).

Table-III
Age distribution of patient with branchial cyst (n=7)

Age group (in year)	Number of patient	Percentage (%)
6-8	2	28.58
10-12	1	14.29
12-14	1	14.29
14-16	3	42.84

Branchial cyst is more in second decade, with age group 14.1-16 in percentage (42.84%).

Table IV
Clinical presentation of branchial cyst (n=7)

Clinical presentation	Number of patient	Percentage (%)
Location		
Right	2	28.57
Left	5	71.43
Infected	1	14.28
Fistula with previous surgery	1	14.28
Upper neck	6	85.71
Lower neck	1	14.28
Cystic	7	100
Solid	0	00

Table IV showing most of the branchial cysts are located upper neck (85.71%) on left side (71.43%) as cystic swelling (71.43%).

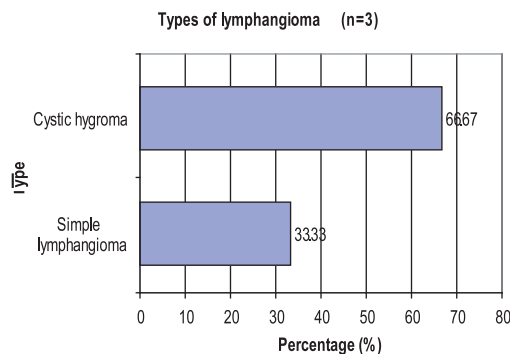


Figure 7: Types of lymphangioma.

In this series cystic hygroma is more common (66.67%) than other varieties.

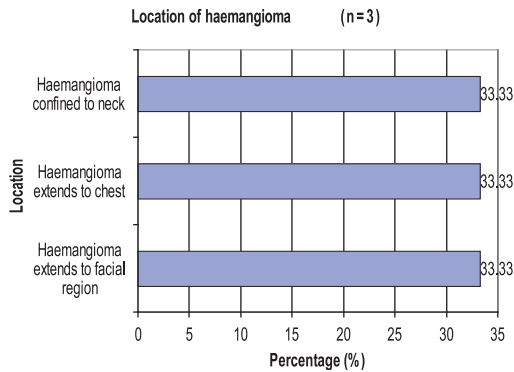


Figure 8: Location of haemangioma.

Majority (66.67%) of the patients present with haemangioma in right side of neck. Among them 33.33% extends to face and 33.33% extends to chest.

Table-V
Ultrasonographic findings of congenital neck swellings

	No. of patients	Percentage (%)
Cystic swelling	34	94.44
Solid swelling	2	5.56

Ultrasonography shows 34 (94.44%) patients having cystic swelling.

Discussion:

A total number of 36 cases of congenital neck mass were studied in the period of 12 months. In the study, age range was from 7 days to 18 years. Majority of the patients belongs to age group 6-8 year. In a study it was found that majority of the patient in age group 0-2 years². A study of 252 cases showed 38% in first decade and 32% in second decade¹. The overall mean and median age were 6.5 and 6 years. In a study among Kenyan paediatric population it was 6.7 and 5 years². The male female ratio in my study is 1.11:1. Different study showed male-female ratio is 1:1.2¹, 1:1².

Out of 36 patients of congenital neck mass, thyroglossal cyst were commonest 21(58.33%). Other congenital lesions were as follows: branchial cyst 7(19.44), lymphangioma 3(8.33%), haemangioma 3(8.33%), and dermoid cyst 2 (5.55%). A study of 252 cases from 1991-2002 showed thyroglossal cyst 53%, branchial cyst 22%, lymphangioma 6%, haemangioma 7%, dermoid 11%¹. in another study reported thyroglossal cyst 29.4%, branchial cyst 19.6%, cystic hygroma 21.6%, haemangioma 2%, dermoid 6%². Most of the study showed thyroglossal cyst is the commonest congenital neck swelling^{1, 2, 8}. But different study showed cystic hygroma as the most frequent congenital neck swelling^{9, 10}.

In this study, age of patient with thyroglossal cyst was 2-18 years. Majority of the patient that is 15 (71.43%) were in age group 4.1-10. Among the published cases 31.5% were under the age of 10 years, 20.4% were in second decade, 34.6% were older than 30 years¹¹. In one series 32% were younger than 10 years and 40.5% were older than 30 years⁶. In this series mean age of presentation was 6-8 years. It differs from study to study. In different articles it is shown as 7.8 years², 37.6 years¹², and 15.4 years¹³.

Out of 21 patients with thyroglossal duct cyst, 11 (52.38%) were male and 10 (47.62%) were female with a ratio of 1.1:1. In most published series sex distribution is equal^{4, 11}. But some series shows male-female ratio is 1:1.375, 1.2:1 and 1:0.22¹⁵⁻¹⁷.

In our series most of the thyroglossal cyst situated in thyrohyoid position in 15(71.43%) patients, suprahyoid 3(14.29%), suprasternal 1(4.76%), intralingual 2(9.52%). A series showed 74% cyst were below the hyoid bone. 22% suprahyoid and 3.7% were over the hyoid bone¹¹. In another series showed thyrohyoid 60%, suprahyoid 25%, Suprasternal 13% and intralingual 2%¹⁸.

This study showed 19(90.48%) patient present with midline neck swelling and 2 (9.52%) patients present with lateral neck swelling on left side. 1 (4.36%) patient present with painful neck swelling, 2 (9.52%) present with infected cyst and 2 (9.52%) present with recurrent cyst. In published series 90% cyst are located in midline and 10% in lateral portion of neck of which 95% in left and 5% in right side⁶. In another study 89.8% were in midline and 10.2% were in lateral position¹³.

In present series 7 (19.44%) patients of branchial cyst found of them 5 (71.43%) were in second decade and 2 (28.57%) in first decade. One study showed peak age of incidence in third decade⁴ and another showed in second decade². Among the patients 4 (57.14%) were male and 3 (42.86%) were female. In most published cases 60% male and 40% female⁴. But one study showed equal ratio of male and female⁸.

Location of branchial cyst were 5 (71.43%) in left side and 2(28.57%) in right side, among them 6(85.71%) in upper neck and 1(14.28%) in lower neck along the anterior border of Sternomastoid muscle. All the branchial cysts were cystic. One patient gave history of previous surgery (14.28%), one patient present with infected cyst (14.28%). In most published series 60% branchial cyst in left side and 40% in right side, 66.67% in upper neck and 33.33% in lower neck, 70% cystic and 30% solid⁴.

Congenital vascular problem is not infrequent in our country. In this present series 6 cases were identified, among them lymphangioma 3(8.33%) and haemangioma 3 (8.33%).

Age of patient of lymphangioma were 2 (66.67%) in 0-4 years and one (33.33%) above 10 years. Two (66.67%) patients present with swelling in right posterior triangle and one (33.33%) in anterior triangle left side. One

(33.33%) was capillary lymphangioma and two (66.67%) were cystic hygroma. No case of cavernous lymphangioma was found. Though capillary lymphangioma is more common in most of the study⁶ cystic hygroma is common in this series. This variation may be due to small sample size. In one study showed cystic hygroma is the most commonly encountered problem among lymphangioma; of which 50-60% present at birth or perinatally and 30% by age of 2 years¹⁹.

Haemangioma is commonest benign tumour of infancy and head-neck is affected by 14% to 20%⁶. In our series there were 3 patients with haemangioma, among them 2(66.67%) present from birth and 1(33.33%) in second decade. 2 patients were male and 1 patient was female. Among the three cases, 2(66.67%) cases found in right side of neck and 1(33.33%) case in left side of neck. One of the haemangioma extended to the right parotid region and another one was extended to thorax. Only one haemangioma was confined to neck only. Infantile haemangioma typically appears in the first few weeks of life²⁰, usually within the first month of life²¹, proliferates for weeks to several months²⁰. A study found male-female ratio was 19:1, was present from birth in 24% children, 75% were located on the scalp and forehead²².

Dermoid usually present in 2nd and 3rd decade but probably been present since birth¹¹. Epidermoid cyst is the most common variety¹¹. In this series, 2 patients of dermoid were found. One patient presents with cystic submental swelling and another presents with solid infrahyoid swelling. No case of teratoid cyst or sublingual variety was found. Histopathology shows one (50%) was epidermoid cyst and one (50%) dermoid cyst.

In the series ultrasonography was done in all patients and ultrasonography shows 34

(94.44%) patients having cystic swelling and remaining 2 (5.56%) patients having solid swelling. All of the solid swellings found in dermoid.

In this series all patient (100%) with congenital neck mass were treated surgically. In thyroglossal duct cyst Sistrunk's operation was done and others are treated by excision. No conservative treatment or treatment with sclerosing agent was done.

Conclusion:

Congenital neck masses constitute diagnostic and therapeutic challenges for many physicians. Work-up and management is lesion dependent, and proper preoperative diagnosis is essential for planning and performing appropriate surgical procedure.

References:

1. Al-Khateeb TH and Al Zoubi F. Congenital neck masses: A descriptive retrospective study of 252 cases. *J Oral Maxillofac Surg* 2007; 65: 2242 - 47.
2. Ayugi JW, Ogeng'o JA, Macharia IM. Pattern of congenital neck masses in a Kenyan paediatric population. *International Journal of Pediatric Otorhinolaryngology* 2010; 74: 64 – 66.
3. Ruchira M, Vacha S, Kamlesh J, Inderraj T. Thyroglossal Cyst: An unusual appearance. *Bombay Hospital Journal* 2010; 52: 93 - 96.
4. John CW, Mark NG, Janet AW. Benign neck disease. *Stell and Maran's Head and Neck surgery*. 4th edition, Oxford, Butterworth Heinemann, 11: 181- 6.
5. David SF, Mary EF. Thyroglossal duct and other congenital midline cervical anomalies. *Seminars in Pediatric Surgery* 2006; 15: 70 - 75.
6. Alan GK and John H. Benign Diseases of Neck. *Scott-Brown's Otolaryngology and Head and Neck Surgery*. 6th edition, London, Butterworth-Heinemann, 1997; 5: 5/16/1-5/16/4.
7. Nandaprasad S and Sharada P. Hemangioma - A review. *Journal of Hematology* 2009; 6: 44 -47.
8. Stephanie PA, John HTW. Congenital Cervical Cysts, Sinuses and Fistulae. *Otolaryngol Clin N Am* 2007; 40: 161–176.
9. Marsot-Dupuch K, Levret N, Pharaboz C. Congenital neck masses: Embryonic origin and diagnosis. Report of the CIREOL. *J Radiol* 1995; 76: 405 - 9.
10. Ragesh KP, Chana RS, Varshney PK, Naun M. Head and neck masses in children: a clinico-pathological study. *Indian J Otolaryngology - Head & Neck Surg* 2002; 54(4): 268 - 71.
11. Shih-Tsang L, Fen-Yu T, Chuan-Jan H, Te-Huei Y, Yuh-Shyang C. Thyroglossal duct cyst: a comparison between children and adults. *American Journal of Otolaryngology- head and neck Surgery* 2008; 29: 83 - 87.
12. Tarcoveanu E, Niculescu D, Elena C, Vasilescu A, Felicia C. Thyroglossal duct cyst. *Journal of Chirurgie Lasi* 2009; 5: 75 - 78.
13. Al-Salem AH, Quasaruddin S, Ahmed M. Thyroglossal cyst: a clinicopathological study. *Saudi Medical Journal* 1996; 17(5): 620-25.
14. Michel G, George B, Martin JB, Ray C, John H, Nicholas SJ, et al. Benign Neck Disease: Infections and Swellings. Michel Gleeson ed. *Scott-Brown's Otorhinolaryngology, Head and Neck Surgery*, Vol.2, 7th edition, Hodder Arnold, 2008;140: 1777-83.

15. Wada S, Omura K. A clinicopathological study on thyroglossal duct cyst: Evaluation of removal of the cyst in combination with resection of the hyoid bone. *Journal of the Japanese Stomatological Society* 1990; 49(2):102-107.
16. Kaselas CH, Tsikopoulos G, Chortis CH, Kaselas B. Thyroglossal duct cyst's inflammation. When do we operate? *Pediatr Surg Int* 2005; 21: 991-93.
17. Ramadive NU, Shorff CP. Thyroglossal cyst (a clinicopathological evaluation with special reference to its malignant potential). *Journal of Postgraduate Medicine* 1984; 30(3): 175 - 8.
18. Guarisco JL. Congenital head and neck masses in infants and children. *Ear, Nose, Throat J*, 1991; 70: 40 - 43.
19. Wong KT, Lee YYP, King AD, Ahuja AT. Imaging of cystic or cyst-like neck masses. *Clinical Radiology*, 2008; 63: 613 - 22.
20. Krol A, MacArthur CJ. Congenital hemangiomas: Rapidly involving and non-involving congenital hemangioma. *Arch Facial Plast Surg* 2005; 7: 307-11.
21. Connor SEJ, Flis C, Langdon JD. Pictorial review: vascular masses of the head and neck. *Clinical Radiology* 2005; 60: 856 - 68.
22. Hoornweg MJ, Smuelders MJ, Vander Host CM. Prevalence and characteristics of haemangiomas in young children. *Ned Tijdschr Geneesk* 2005; 149(44): 2455 - 8.