



# Neck masses in paediatric population: An experience with children attended the Central Teaching Hospital of Pediatrics in Baghdad 2008-2009

Ali F. Al-Mayoof

## ABSTRACT

**Background:** Pediatric neck mass is a frequent cause for surgical consultation. Neck masses can be simply classified into congenital, inflammatory, and neoplastic. Although most of the cases are due to benign processes, malignant causes must not be overlooked. The aim of this study is to assess the paediatric neck masses in Iraqi patients highlighting the distribution of cases according to their demographic characteristics and etiology. **Patients and Methods:** A cross-sectional observed study is conducted in the Department of Pediatric Surgery, at the Central Teaching Hospital of Pediatrics in Baghdad from April 2008 to March 2009. Sixty four patients with neck masses aged 14 years and below were examined and managed. The underlying causes of the neck masses were addressed and categorized. **Results:** Among the 64 patients, 42 (65.6%) were male. The inflammatory group represents 57% of the cases, while the malignant neoplasm accounts for approximately 10% of the conditions mainly due to lymphoma 5 (7.8%). Sixteen patients (25%) fall in the congenital group, in which the thyroglossal duct cyst was the commonest type. Wound infection developed in two patients, while one patient with cystic hygroma showed recurrence. **Conclusion:** Pediatrics neck masses are distributed in categories that similar in pattern and distribution in the world except the infectious/inflammatory category that shows variation in distribution in respect to the socioeconomic status. The surgical intervention and procedures are related to the facility as well as to the experience.

**Key words:** Inflammatory, neoplastic, pediatrics neck masses, reactive lymphadenitis

## INTRODUCTION

Most of the neck masses in children are benign in their nature and clinical course. The broad spectrum of etiology of neck masses that ranged from congenital benign to acquired neoplastic lesions is varied and related to multiple factors.<sup>[1-5]</sup> In one study included 446 child, the congenital neck masses accounted for 54%.<sup>[6]</sup> The demographic characteristics of children presented with neck masses varied with the location and residency of patients.<sup>[5,7]</sup> Clinical and radiographic evidences are enough to establish accurate diagnoses in pediatric neck masses except in cases of nonspecific clinical conditions as in inflammatory lymphadenopathy or malignancies in which open biopsy is required.<sup>[8]</sup> Surgical excision is the optimal choice of treatment in neck lesions, for aesthetic reasons and for the prevention of recurrent infections in addition to the potential danger of malignancy.<sup>[9]</sup> The most common congenital pediatric neck lesions are thyroglossal duct remnant, followed by branchial cleft anomalies<sup>[4,10]</sup> The rationale of doing this study is related to the demographic characteristics of patients presented with neck masses differed with the location of the population. Therefore, the aim of this study is to assess the pediatric neck masses in Iraqi patients attended one teaching hospital over 1-year in an attempt to highlight the distribution of cases according to their demographic characteristics and etiology.

## PATIENTS AND METHODS

This cross-sectional of observed study is conducted in the Department of Pediatric Surgery, at The Central Teaching Hospital of Pediatrics in Baghdad from April 2008 to March 2009. This study is approved by the Institutional Scientific Committee at the College of Medicine in Al-Mustansiriya University. The patients attended the Surgical Consultation Clinic presented with neck mass seeking for management. The eligible

Department of Pediatric Surgery, College of Medicine, Al-Mustansiriya University, Baghdad, Iraq

**Address for correspondence:**

Dr. Ali F. Al-Mayoof,  
Department of Surgery, College of Medicine,  
Al-Mustansiriya University, P.O. Box 14132, Baghdad, Iraq.  
E-mail: dr.ali.f.abdullah@gmail.com

patients were below 15 years of both genders. The criteria of inclusions included neck mass of whatever origin or site that caused discomfort to the patient or his/her parents and ended with surgical intervention either to treat or reach definite cause. The criteria of exclusions included thyroid gland enlargement or goiter, oral diseases and acute infections complicated with lymphadenopathy associated acute infections that responded to medical therapy, e.g., tonsillitis, otitis media, etc.

A total number of 64 patients (42 males and 22 females) who fulfill the above criteria were collected over 1-year and enrolled in this study. The clinical history was obtained from the parents or the proxy of the patients. Each patient was physically examined and a proper laboratory and/or radiological investigations were carried on to achieve the definite diagnosis. The neck masses are categorizing into the following categories: Congenital, Inflammatory, Non-neoplastic Non-inflammatory conditions, and Neoplastic. All surgical cases were prepared and planned for appropriate surgical management according to the diagnosis. Patients subjected to the surgical interventions were followed-up for 6-18 months. Medical cases including lymphoproliferative disorders, reactive lymphadenopathy or metastatic lymphadenopathy, were referred to the medical consultation clinic for proper management. The results are expressed as number, percent and whenever possible as a range and mean.

## RESULTS

This study included 64 patients with age ranged from 1 day to 14 years (mean 3.7 years). According to the aetiology, the inflammatory category was the main group accounting for 37 cases (57.8%), followed by the congenital category 16 (25%), neoplastic 8 (12.5%), and then the noninflammatory non neoplastic 3 (4.7%) as shown in Table 1. The main cause of neck mass in patients under 15 years old was reactive (nonsuppurative) lymphadenitis that accounts for 26 out of 64 patients (40.6%). Surgical interventions were done as a part of excision-diagnostic or as a part of management [Table 2]. During the follow-up, recurrence of cystic hygroma is observed in one out of three patients. Wound infections observed in two patients; one followed excised lymph node for biopsy and the other presented with wound infection after thyroglossal cyst excision.

## DISCUSSION

The results of this study show that the most common aetiological cause of pediatric neck masses is inflammatory. Torsiglieri *et al.* (1988) examined 446 pediatric neck masses at the Children's Hospital of Pennsylvania and found 27% of them were of inflammatory cause that is less than corresponding percent reported in this study.<sup>[6]</sup> The reason for this discrepancy is related to the socioeconomic status of developing countries like Iraq. In Kenya, the most common cause of pediatric neck masses is of inflammatory origin that accounts for 64% which is higher than corresponding percent of this study.<sup>[11]</sup> This high percent is attributed to the medical failure due to inappropriate or delayed pharmacotherapy which leads to high figure in the suppurative type. The same results is also observed in India in which the inflammatory group represent 54% of pediatric neck masses, from them tuberculous lymphadenitis constitute half of the cases.<sup>[12]</sup> In one study done in Turkey and included the assessment of neck masses in 630 patients of all ages, the inflammatory category accounted 33.4%.<sup>[13]</sup> Recently Meier and Grimmer (2014) categorized the pediatric neck masses into three categories: Developmental, inflammatory/reactive, or neoplastic and mentioned that the most common causes of inflammatory/reactive

**Table 1: Age and sex distribution of cases of neck masses according to the etiology**

Etiology	Number (%)	Average age	Male:female
<b>Congenital</b>			
Thyroglossal duct cyst	6 (9.3)	7.3 years	5:1
Branchial cleft anomalies	5 (7.8)	6.8 years	3:2
Cystic hygroma	3 (4.7)	17.3 day	2:1
Dermoid cyst	1 (1.6)	3 years	1:0
Hemangioma	1 (1.6)	2 months	1:0
<b>Inflammatory</b>			
Abscess (suppurative lymphadenitis)	10 (15.6)	2.4 years	7:3
Reactive nonsuppurative lymphadenitis	26 (40.6)	6.8 years	14:12
Tuberculous adenitis	1 (1.6)	11 years	0:1
<b>Noninflammatory benign</b>			
Fibromatosis colli (sternomastoidtumour)	2 (3.1)	4.1 months	1:0
Epidermal Inclusion cyst	1 (1.6)	13 years	0:1
<b>Neoplastic</b>			
<b>Benign</b>			
Lipoma	1 (1.6)	10 years	1:0
<b>Malignant</b>			
Lymphoma	4 (6.2)	3.2 years	3:1
Burkitts	1 (1.6)	9.1 years	1:0
Teratoma	1 (1.6)	2 months	1:0
Metastatic	1 (1.6)	11.3 years	1:0

**Table 2: Surgical interventions to the patients presented with neck mass**

Categories	Diagnosis	Number of cases	Surgical intervention	Complications (number)
Congenital	Thyroglossal duct cyst	6	Sistrunk operation	Wound infection (1)
	Branchial cleft anomalies	5	Excision with/without step ladder incision	—
	Cystic hygroma	3	Excision ±sclerotherapy	Recurrence (1)
	Dermoid cyst	1	Excision	—
	Hemangioma	1	Excision	—
Inflammatory	Abscess (suppurative lymphadenitis)	10	Incision and drainage	—
	Reactive nonsuppurative lymphadenitis	26	Excision	—
	Tuberculous adenitis	1	Excision	—
Noninflammatory benign	Fibromatosis colli (sternomastoidtumour)	2	Excision + physiotherapy	—
	Epidermal Inclusion cyst	1	Excision	—
Neoplastic	Lipoma	1	Excision	—
	Lymphoma	4	Excision	Wound infection (1)
	Burkitts	1	Excision	—
	Teratoma	1	Excision	—
	Metastatic	1	Excision	—

category are reactive lymphadenopathy, infectious lymphadenitis (viral, staphylococcal, and mycobacterial infections; cat-scratch disease), or Kawasaki disease.<sup>[14]</sup> The percent of neoplastic category of pediatric neck masses that reported in this study is 12.5% that is similar to that reported by Goins and Beasley (2012) which accounted to 11-15%.<sup>[15]</sup> Moreover, the percent of the congenital category that reported in this study (25%) is in agreement with other studies all over the world 22%<sup>[5]</sup> and 30%<sup>[12]</sup>. In this study the majority of cases are male, with a male:female ratio 1.9:1 which is the same result observed by Osifo and Ugiagbe (2011) study included 35 children with neck masses,<sup>[16]</sup> but different from other studies in which the male:female ratio was 1:1.2<sup>[4]</sup> and 1:1.<sup>[5]</sup> In this study, the surgical intervention included specific carried upon thyroglossal duct cyst, branchial cleft and cystic hygroma, and non-selective that included excision, and/or drainage for the conditions that is listed in Table 2. The approach and results of surgical intervention have similarity and discrepancy to those reported by others.<sup>[17-20]</sup>

## CONCLUSION

Pediatrics neck masses are distributed in categories that are similar in pattern and distribution in the world except the infectious/inflammatory category that shows variation in distribution in respect to the socioeconomic status. The surgical intervention and procedures are related to the facility as well as to the experience.

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