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Pediatric Otolaryngology at the public health system of a city in Southeastern Brazil

ABSTRACT

OBJECTIVE: To assess the suitability of referral from primary to secondary care in pediatric Otolaryngology.

METHODS: The study was performed in the city of Belo Horizonte, in the state of Minas Gerais, from March 2004 to May 2005. A total of 408 pre-school children referred from primary care to secondary care in the department of Otolaryngology presenting with otitis, tonsillitis, sinusitis, allergic rhinitis, and tonsillar/adenoidal hypertrophy was assessed. The studied variables were: agreement between diagnoses in primary and secondary care; waiting time for doctor's appointment; follow-up, and professional (pediatrician or family physician) that examined children in primary care. Agreement of diagnoses was assessed using kappa statistics.

RESULTS: Patients were five years old on average, 214 (52.5%) were boys, mean waiting time for appointment was 3.7 months. Diagnoses in primary and secondary care were respectively: otitis (44%, 49%), tonsillar/adenoidal hypertrophy (22%, 33%), tonsillitis (18%, 23%), sinusitis (13%, 21%), allergic rhinitis (3%, 33%). Agreement analysis of kappa was 0.15 for otitis with effusion, 0.35 for recurrent otitis, 0.04 for tonsillar/adenoidal hypertrophy, 0.43 for tonsillitis, 0.05 for allergic rhinitis, and 0.2 for sinusitis. Diagnoses in primary care referred to secondary care were in agreement when given either by pediatrician or family physician.

CONCLUSIONS: Unsuitability of referrals from primary to secondary care in Otolaryngology was expressed by the long time waiting for appointments and by the low agreement between diagnoses in different level of care for the same patients. Primary health care could be more efficient if professionals were better qualified in Otolaryngology.

KEY WORDS: Otorhinolaryngologic diseases, epidemiology. Otorhinolaryngologic diseases, prevention & control. Primary health care. Secondary health care. Health care (public health). Health services. Preschool child.

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INTRODUCTION

It is estimated that 25% of cases in primary care are related to ear, nose and throat diseases.^{3,15} Those more commonly assessed are infectious or allergic diseases occurring more often among the pediatric population.¹⁸ Otolaryngological disorders are the most prevalent diseases in primary care and has been concerning for the Brazilian National Health System (SUS) because the demand for appointments for this specialty in secondary care have been greater than the number of appointments offered.¹⁸

Secondary care is the bases for referral/counter-referral, necessary to ensure the efficiency of the current hierarchical model of health care.²¹ In Brazil, the introduction of this model and therefore, of family medicine, has been facing some problems. One of these problems is the overload of referrals for specialized medical services in secondary care.⁵ This could be due to the difficulties of resolution in primary care.¹⁶ One of the main challenges of this level of care is to decide when to refer the patient to be seen by a specialist in second or tertiary care.²¹

Belo Horizonte is the capital of the state of Minas Gerais and one of the main urban centers in the country, it is the fifth city in terms of population with 2.399.920 inhabitants.* In the public health service of this city, Otolaryngology is considered a field with difficulties to fulfill the needs of the population.** In pediatrics Otolaryngology, the reference secondary care facility (URS) “Saudade” serves the whole city, and is also considered as a reference center for the sub-specialty in the state of Minas Gerais.*** To get acquainted with the problems faced by this center regarding care may help developing strategies to improve not only health systems in Belo Horizonte, but also in several places in Brazil in a similar situation.

Within this perspective, the present study aimed at assessing referrals from primary to secondary care in pediatric Otolaryngology.

METHODS

Cases assessed were of patients zero to 16 years old, seen in primary care of SUS health unity in Belo Horizonte by pediatricians or by physicians from Family Health Program (family physicians) referred to otolaryngological assessment at URS secondary care unity Saudade. This URS health unity has two specialists in pediatric Otolaryngology with an average of 120 appointments per week divided into 60 first appointments and 60 further appointments.***

The population chosen was restricted to pediatric, because this age group concentrates most of the otolaryngological disorders.^{15,16} Inclusion criteria were: the patient with otolaryngological disorders had to be assessed in a public health service in primary care had been referred to secondary care by the pediatrician or by the family physician.

Exclusion criteria used were: patient referral form

without diagnoses, illegible handwriting, and cases where complementary exams more sophisticated than a simple X-ray of the sinus face were necessary to define diagnoses.

Diagnoses assessed were the most commonly seen otolaryngological disorders in primary care:^{13,16} allergic rhinitis, recurrent/ chronic tonsillitis, recurrent/chronic otitis media, recurrent/chronic sinusitis, and tonsillar and adenoidal hypertrophy. Acute diseases were not considered, since they are related to emergency services and they suffer influence with the waiting time for care.¹⁴

Criteria to define diagnoses assessed in primary care were its clear specification in the patient referral form for secondary care. In this level of care, diagnoses were defined by otolaryngological examination performed by specialist, using only instruments available in primary care for the physical examination, that is: tongue blade, otoscopy, and direct light source.

Clinical criteria to define diagnoses in the study by Otolaryngology were:

1. allergic rhinitis – symptoms of nasal obstruction, sneezing, watery rhinorrhea and pruritus when the patient was in contact with the sensitized inhaled antigen, associated with edema or hyperemia of the nasal turbinates seen by anterior rhinoscopy,^{1,4,20}
2. tonsillar and adenoidal hypertrophy – presence of excessive adenotonsillar hypertrophy with picture of snoring, speech and swallowing disorders, orofacial deformities, dysphagia, poor dental occlusion, obstructive sleep apnea syndrome.^{6,16}

Criteria for recurrent/chronic infection were:

1. throat – persistent hyperemia of tonsil with enlarged submandibular lymph node and a history of three or more episodes of infection in the six months before, and antibiotic prescription was necessary to resolve the disease;^{15,22}
2. nose – history of three or more episodes of infection in the months prior to the appointment, associated with chronic nasal obstruction, or purulent nasal discharge;^{3,7}
3. ears – persistent reddening or thickening of the eardrum, evidence of remaining effusion in the middle ear seen by otoscopy, or perforated tympanic membrane.^{2,8,14}

* Population projection according to age and gender, per Unidade de Planejamento (Planning Unity). CEDEPLAR. UFMG. 2003 http://portal4.pbh.gov.br/pbh/pgESEARCH_CENTRO.html?paramIdCont=9844

** Junior HMM, Caiaffa NMD, Gariglio MT. Relatório analítico sobre a questão da otorrinolaringologia no SUS-BH. Secretaria Municipal de Saúde de Belo Horizonte, 2000.

*** Secretaria Municipal de Saúde de Belo Horizonte (SMS-BH) - 2001. O Sistema Municipal de Saúde em Belo Horizonte.

Table 1. Distribution by age of children assessed by otolaryngologist in secondary care according to gender. Belo Horizonte, MG, 2004-2005. N=408.

Age (years)	Male		Female		Total	
	N	%	N	%	N	%
0-2	50	23.4	37	19.1	87	21.3
3-4	57	26.6	53	27.3	110	27.0
5-6	42	19.6	42	21.6	84	20.6
7-8	31	14.5	26	13.4	57	14.0
9-10	22	10.3	19	9.8	41	10.0
11-12	8	3.7	17	8.8	25	6.1
13-14	4	1.9	0	0	4	1.0
Total	214	100.0	194	100.0	408	100.0

From March 2004 to May 2005, 1500 patients were assessed in secondary care with otolaryngological complaints. Of these referred cases, 408 (27.2%) patient referral forms met the inclusion criteria. Of the 1092 (72.8%) excluded, diagnoses had not been described in 975 (89.3%) forms and handwriting was illegible in 117 (10.7%).

Variables assessed were: waiting time for otolaryngological appointment; Professional assessing the patient in primary care (pediatrician or family physician); diagnoses defined in primary care at referral; diagnosed given by otolaryngological examination in secondary care; if the patient had been followed-up in primary care by the same professional and agreement between the diagnose of patients assessed in the two levels of care.

Agreement between diagnoses was assessed using kappa statistics, considering kappa greater than 0.75 as excellent agreement, 0.40 to 0.75 as intermediate agreement and lower than 0.40 as low agreement.¹¹ To compare the ability to get the diagnoses of primary care professionals right, diagnoses in this level of care that were in agreement with secondary care were assessed regarding the physician responsible for the care (pediatrician or family physician). The null hypotheses that the skill of the pediatrician in diagnosing children with otolaryngological disorders is the same as to that of the family physician was assessed, considering the 5% level of statistic significance.

Statistic program used was Epi Info, version 6.04. Input control in the database was conducted by checking the program and only one researcher entered the data. Checking correct typing was done for all patients.

The study was approved by the Ethical Committee of the Universidade Federal de Minas Gerais, under the # 096/04.

RESULTS

Regarding the professional who had referred the patient to secondary care, 242 (59.3%) patients had been referred by a pediatrician and 166 (40.7%) by a family physician. Concerning follow-up in primary care, 124 (30.4%) of patients had been followed up by the same doctor.

Mean waiting time for the first appointment with a specialist in secondary care was 3.8 months (median=2.2; SD = 4.7), ranging from 3 days to 35 months.

Mean age of the population studied was 5.3 years (SD= 3.1), 214 were boys (52.5%) and 194 (47.5%) girls. Distribution of the population regarding gender and age in years is described in Table 1.

Table 2 describes the general frequencies for all diagnoses given in each care level. In secondary care, total number of diagnoses was greater than the total number of patients assessed because there was more than one diagnoses per patient (mean 1.6 diagnose per patient).

Table 2. Frequency of the diagnose, according to care level. Belo Horizonte, Southeastern Brazil, 2004-2005.

Diagnoses	Level of care			
	Primary		Secondary	
	N	%	N	%
Recurrent/chronic otitis media	180	44.2	198	48.7
Tonsillar/adenoid hypertrophy	89	21.8	135	33.0
Recurrent/chronic tonsillitis	73	17.9	95	23.3
Recurrent/chronic sinusitis	52	12.7	87	21.3
Allergic rhinitis	14	3.4	134	32.8
Total	408	(100.0)	649	(159.1)*

* Ratio diagnoses per patient in secondary care was 1.6

Table 3. Agreement of the diagnoses described in the in the two levels of care. Belo Horizonte, Southeastern Brazil, 2004-2005.

Diagnose	Confirmed in primary care N	Confirmed in secondary care N	Kappa	p-value
Recurrent/chronic otitis media	180	75	-0.02	0.90
Tonsillar/adenoid hypertrophy	89	33	0.01	0.40
Recurrent/chronic tonsillitis	73	46	0.43	0.00
Recurrent/chronic sinusitis	52	23	0.20	0.84
Allergic rhinitis	14	8	0.05	0.02
Total	408	185	-	-

Concerning cases presenting with recurrent/chronic otitis, ten cases of tympanic membrane perforation were observed in secondary care, whereas for the same patients assessed there was only one case of perforation described in the patient referral form.

Table 3 presents the agreement in diagnoses among the levels of care, statistical significance was observed for chronic/recurrent tonsillitis and allergic rhinitis. kappa agreement was reasonable (0.43) for tonsillitis and low for allergic rhinitis (0.05)

Comparing primary care regarding the agreement with diagnoses given by the otolaryngologist, Table 4 shows that there was no statistically significant difference between the ability of the family physician related to the pediatrician in the diagnoses given in primary care.

DISCUSSION

The demand for appointments and surgeries in Otolaryngology has been considered greater than the supply of care for the specialty in Belo Horizonte* as well as in other capitals of Brazil.¹ These data show the difficulties that public services have faced to solve the problem of specialties in secondary care.

The great variability of waiting time for an appointment with a specialist needs to be improved, since mean time was 3.7 months, with a maximum of 35 months. This interval may worsen chronic diseases, increasing the cost for treatment.

Regarding otolaryngological disorders, chronic/recurrent otitis media with intact tympanic membrane was the most prevalent diagnoses in the two levels of care (Table 2). Table 3 shows that there was no agreement for these diagnoses in the two levels of care, and the outcome did not present statistic significance. Probably, there were cases of chronic/recurrent otitis media defined in primary care that were not in agreement with the same diagnoses in secondary care. Similarly, cases

diagnosed in secondary care had not been noticed in primary care. The clinical diagnosis of otitis is related to the skill of the professional in performing suitable otoscopy.^{14,17-20}

Outcomes indicate that professionals in primary care may have difficulties in otoscopy. Another possibility is that they are not informing perforation of the tympanic membrane on the patient referral form. Of the ten cases of tympanic membrane perforation confirmed in secondary care, only one description of perforation had been done by primary care professionals.

For cases presenting with otitis that were not confirmed in secondary care, impacted cerumen may hinder otoscopy. Many cases assessed in primary care and referred with diagnoses of chronic/recurrent otitis could actually have been cases of impacted cerumen. Up to the present, the apprenticeship of physicians in primary care to remove impacted cerumen has not been encouraged, and the patient is referred to secondary care to undergo the procedure. The problem is that secondary care in Otolaryngology can not cope with the demand.^{5,16} Removing impacted cerumen is a procedure of low complexity and low risk.^{11,13} Therefore, primary care professionals could be trained for removing impacted cerumen, enabling secondary care professionals to perform actions and procedures restricted to their specialty, therefore enhancing the efficiency of the system.

For cases referred for other disease rather than otitis that were diagnosed as chronic otitis in secondary care through active search of the disease, there is concern with chronic and persistent effusion of the middle ear, which is frequent in childhood. Although it could lead to mild bilateral hearing loss, this type of otitis does not evolve with pain and otoscopy presents mild alterations. Clinical suspicion is related to directed anamneses and detailed otoscopy.^{2,8,9,11,17-19} Otitis with chronic effusion may be a reason for poor school performance, lack of attention or irritability of the children². To define diagnoses of chronic effusion, follow-up of patients with

* Junior HMM, Caiáffa NMD, Gariglio MT. Relatório analítico sobre a questão da otorrinolaringologia no SUS-BH. Secretaria Municipal de Saúde de Belo Horizonte, 2000.

Table 4. Comparative analysis of diagnoses in agreement defined by pediatricians in relation to family physicians. Belo Horizonte, Southeastern Brazil, 2004-2005.

Defined in primary care		Confirmed in secondary care				p-value
		Pediatrician		Family physician		
		N	%	N	%	
Recurrent/chronic otitis media N=180 (%)	Yes	46	26	29	16	0.77
	No	61	34	44	24	
Tonsillar/adenoid hypertrophy N=89 (%)	Yes	24	27	9	10	0.16
	No	31	35	25	28	
Recurrent/chronic tonsillitis N=73 (%)	Yes	25	34	21	29	0.37
	No	11	15	16	22	
Recurrent/chronic sinusitis N=52 (%)	Yes	18	34	5	10	0.23
	No	17	33	12	23	
Allergic rhinitis N=14 (%)	Yes	6	43	2	14	0.61
	No	5	36	1	7	

serial otoscopy is essential.^{17,18} In the present study, only 30% of children were followed up by the same professional in primary care. For the cases of chronic otitis media with effusion, the treatment includes low complexity surgery, with return of hearing at normal threshold.^{10,16,17,19}

Chronic nasal obstruction was, in the present study, the main otolaryngological disorder in primary care. Most common causes of nasal obstruction in childhood are allergic rhinitis, sinusitis and tonsillar and adenoidal hypertrophy.^{4,7,15} These diagnoses were predominant as a reason for referral, representing 38% in primary care doctor, and 55% in secondary care (Table 2). Chronic nasal obstruction in childhood causes sleep and attention disturbances, hindering cognitive orthognathic, and physical development.⁷ The development of skill in primary care professionals to define correctly the cause of nasal obstruction based on a detailed anamnesis and on an examination of the anterior region of the nose may be an effective strategy to enhance the quality of otolaryngological care in primary care.^{13,15,21}

In the approaching of diseases associated with nasal obstruction in childhood, allergic rhinitis and sinusitis are clinically treated, whereas tonsillar hypertrophy and adenoid are treated as surgical procedure.^{6,16} At first, only the cases of tonsillar and adenoidal hypertrophy should be referred to secondary care, which would increase the efficiency of the hierarchical health system. Differential diagnoses among these causes of nasal obstruction may be conducted according to clinical criteria and simple X-ray.²² Table 2 shows that, according to the physician in primary care, the most frequent diagnoses for nasal obstruction was sinusitis. According to the specialist, allergic rhinitis was the most frequent cause. It is supposed that many patients referred to secondary care with diagnoses of chronic

sinusitis, actually had allergic rhinitis. As the treatment for recurrent/chronic sinusitis is based on the use of antimicrobials, misuse of this medication may have occurred in primary care.

Diagnose of allergic rhinitis was frequent in secondary care (Table 2). However, allergies should be treated in primary care. Asthma is an example of a disease related to allergy that has been well controlled in primary care¹. Asthma and allergic rhinitis are associated regarding their physiopathology, and as the frequency of allergic rhinitis was high in secondary care, public health actions are justified to add to the asthma control program, the control and treatment of allergic rhinitis.^{1,4} Expanding the program could reduce the final public cost with respiratory diseases, in addition to minimizing the indiscretion use of antibiotics in patients with allergic rhinitis.

Regarding the family physician's ability to treat pediatric cases, the outcomes on Table 4, enable to assume that their behavior was similar to that of pediatricians. Family medicine has become a specialty the can enhance resoluteness of SUS.^{3,21}

The limitation of the present study is the exclusion of two thirds of the patients referral forms during data collection, because they had not been correctly fulfilled by the professionals in primary care. However, the interference in final outcomes must be assessed in light of the focus on randomness of losses. Additionally, this shows a disorganization of the system. Health professionals should be better orientated to fulfill the referral forms correctly, due to its importance, both regarding epidemiology and referral/counter-referral.

To conclude with, the diseases more commonly assessed were recurrent/chronic otitis with intact tympanic membrane and tonsillar/adenoid hypertrophy. Wrong

filling up of patients referral form, long waiting time for an appointment with a specialist, and low rate of agreement between diagnoses in the two care levels are indicators to propose strategies to enhance health system.

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