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ICD-10 coding in otorhinolaryngological malformations: Analyses of 2342 Q-diagnoses

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ABSTRACT

Introduction: The 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) includes more than 14,400 codes. The aim of this study was to study the prevalence and demographics of otorhinolaryngological congenital malformations in an outpatient clinic based of the ICD-10 Q-diagnoses used for congenital malformations, deformations and chromosomal abnormalities.
Materials and methods: Electronic hospital records covering six years (2007–2013) were searched to identify all patients with ICD-10 Q-diagnosis.
Results: 2342 patients were identified. Malformations of the face and neck were most prevalent (30%). The gender distribution was equal except malformations of tongue, mouth and pharynx, where 70% of the patients were male.
Conclusions: There seems to be a significant excess of ICD-10 codes for otorhinolaryngological malformations. Ten most common otorhinolaryngological malformation codes cover more than 94% of the diagnoses. In addition, the illogicalities and the possibility of coding by diagnosis, symptoms or clinical findings makes the coding suboptimal for the purposes it was originally created for. Malformations of the nose and larynx are rare compared to other anatomic localizations. The age at diagnosis of branchial cysts differs significantly from all other congenital malformations supporting the theory of cystic transformation of cervical lymph nodes.

1. Introduction

1.1. ICD-10 and congenital malformations

The 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) includes more than 14,400 codes. In addition to diseases, ICD-10 allows coding for a number of health related conditions such as clinical findings, symptoms, social circumstances, and external causes of injury or diseases. ICD-10 coding has become vital for epidemiology, health management and clinical purposes. The codes allow to monitor the incidence and prevalence of diseases at hospital, national or even global levels. In addition to ICD-10, there are national modifications often allowing even greater number of coding possibilities [1].

The chapter seventeen (XVII) of the ICD-10 contains codes for congenital malformations, deformations and chromosomal abnormalities. The chapter is divided into eleven blocks, mainly based on anatomic localizations, but includes also blocks such as "Other congenital malformations" (Q80–89) and "Chromosomal abnormalities, not elsewhere classified" (Q90–99) [2].

1.2. Aim of the study

The general prevalence of head and neck malformations is impossible to determine. Some of these Q-diagnosis, such as tongue-tie or prominent ears, are common and subjective, where as some malformations are almost non-existent. The aim of this descriptive study was to find out the prevalence and demographics of congenital malformations, deformations and chromosomal abnormalities and the use of ICD-10 codes at an outpatient clinic of the Department of Otorhinolaryngology—Head and Neck Surgery, Helsinki University Central Hospital, Finland.

2. Methods

HUCH is a tertiary care referral center attending specialist level health care to approximately 1.5 million people in Southern

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Table 1
Characteristics of ORL-malformations based on ICD10 blocks.

	n	Female	Infant (−23 mo)	Child (2–12 y)	Adolescent (13–18 y)	Adult (19–44y)	Middle aged (45–64 y)	Aged (65+ y)
All	2342	47%	19%	**41%**	9%	20%	9%	2%
Q16–Q17	519 (22%)	55%	16%	**56%**	13%	9%	4%	0.6%
Q18	706 (30%)	55%	6%	22%	7%	**42%**	19%	4%
Q30	29 (1%)	48%	14%	**48%**	14%	17%	2%	0%
Q31	35 (1%)	54%	**43%**	40%	0%	3%	9%	6%
Q38	603 (26%)	30%	21%	**72%**	3%	3%	0.3%	0%
Other	450 (19%)							

Finland. Electronic hospital records covering the time from January 2007 to January 2013 were searched to identify all outpatient clinic patients with ICD-10 Q-diagnosis. Blocks or subblocks Q16 "Congenital malformations of ear causing impairment of hearing", Q17 "Other congenital malformations of ear", Q18 "Other congenital malformations of face and neck", Q30 "Congenital malformations of nose", Q31 "Congenital malformations of larynx" and Q38 "Other congenital malformations of tongue, mouth and pharynx" were selected for further analyses. The patients were analyzed for gender, anatomic localization, age, and ICD-10 coding. Due to the data collection software, one Q-diagnose for each patient could be identified.

Institutional review board approval was obtained for this retrospective study based on hospital records only.

3. Results

The search of electronic hospital records for outpatient Q-diagnoses identified 2342 patients (other). Congenital malformations of the face and neck (Q18) was the most prevalent block (706/2342, 30%), followed by (other) Congenital malformations of tongue, mouth and pharynx (Q38) and Congenital malformations of the ear (Q16–17). The prevalence of different malformations based on anatomic localization and ICD-10 coding is shown in Table 1. The age distribution of the patients is shown in Table 1. The gender distribution was relatively equal for all other blocks except for Q38 (other congenital malformations of tongue, mouth and pharynx), where 70% of the patients were male (Table 1). Each anatomic (sub)block was further analyzed to determine the prevalence of each specific ICD-10 code. The prevalence of different diagnoses in these five blocks are shown in Tables 2–6.

Table 2
Distribution of otological malformations.

Q16 Congenital malformations of ear causing impairment of hearing and Q17 Other congenital malformations of ear (*n* = 519)		
Q17.5	Prominent ear	56% (292)
Q17.2	Microtia	19% (99)
Q16.1	Congenital absence, atresia and stricture of auditory canal (external)	8% (43)
Q17.0	Accessory auricle	5% (24)
Q17.9	Congenital malformation of ear, unspecified	4% (20)
Q17.3	Other misshapen ear	2% (12)
Q17.8	Other specified congenital malformations of ear	2% (8)
Q16.9	Congenital malformation of ear causing impairment of hearing, unspecified	1% (5)
Q16.0	Congenital absence of (ear) auricle	0.7% (4)
Q16.3	Congenital malformation of ear ossicles	0.7% (4)
Q17.1	Macrotia	0.7% (4)
Q16.4	Other congenital malformations of middle ear	0.4% (2)
Q16.5	Congenital malformation of inner ear	0.2% (1)
Q16.2	Absence of eustachian tube	0% (0)
Q17.4	Misplaced ear	0% (0)

4. Discussion

4.1. Limitations of the study

The aim of this study was to describe the prevalence and demographics of congenital malformations in the outpatient clinic of our hospital. Our department is the only otorinolaryngological tertiary center of the region, treating both children and adults. However, the prevalence and age distribution analyses are always unreliable as some patients might be treated elsewhere, in this case most likely by pediatric surgeons. Analyses of electronic hospital records is cost-effective and provides huge amount of data. However, limitations of such studies are obvious: there most certainly is considerable variation in the use and recording of codes. Instead of studying malformations, one can argue, that these type of studies analyze the use of ICD-10 codes instead of patients with diseases. Despite the limitations some conclusions can be made from the analyses.

4.2. Anatomic distribution of malformations

Based on the Q-codes, the anatomic localization of head and neck malformations is in imbalance. The prevalence of malformations of ear (Q16–17, 22%), face and neck (Q18, 30%) and tongue, mouth and pharynx (Q38, 26%) seems relatively equal, but the lack of malformations of nose (Q30, 1%) and larynx (Q31, 1%) is distinct. There is no obvious explanation for this imbalance. The embryology

Table 3
Distribution of malformations of face and neck.

[0,1-3]Q18 Other congenital malformations of face and neck (*n* = 706)		
Q18.0	Sinus, fistula and cyst of branchial cleft	51% (363)
Q18.8	Other specified congenital malformations of face and neck	25% (174)
Q18.1	Preauricular sinus and cyst	20% (140)
Q18.2	Other branchial cleft malformations	2% (17)
Q18.3	Webbing of neck	0% (0)
Q18.4	Macrostomia	0% (0)
Q18.5	Microstomia	0% (0)
Q18.6	Macrocheilia	0% (0)
Q18.7	Microcheilia	0% (0)
Q18.9	Congenital malformation of face and neck, unspecified	0% (0)

Table 4
Distribution of malformations of the nose.

Q30 Congenital malformations of nose (*n* = 29)		
Q30.0	Choanal atresia	52% (15)
Q30.1	Agenesis and underdevelopment of nose	28% (8)
Q30.2	Fissured, notched and cleft nose	14% (4)
Q30.3	Congenital perforated nasal septum	3% (1)
Q30.8	Other congenital malformations of nose	3% (1)
Q30.9	Congenital malformation of nose, unspecified	0% (0)