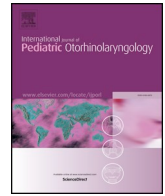




Contents lists available at ScienceDirect

International Journal of Pediatric Otorhinolaryngology

journal homepage: www.elsevier.com/locate/ijporl

ENT management of children with adenotonsillar disease during COVID-19 pandemic. Ready to start again?

ARTICLE INFO

Keywords:

SARS-CoV-2
 Coronavirus
 Infection
 Adenoid
 Tonsil
 Adenoidectomy
 Otitis

ABSTRACT

Clinical manifestations of COVID-19 in children are milder, but the real burden of disease is unknown. After the lockdown, in our Region Lombardia we have been requested to progressively resume medical services including outpatient assessment and priority surgery. Therefore, we screened surgical waiting lists with identification of 47 children candidates to priority surgery (among 358). No homogeneous national health surveillance/screening programs are ongoing or have been conceived to test susceptible population among children/healthcare workers in preparation of coming down to routinely daily activities, and diagnostic strategies are not completely accurate in children. So, restoring medical services now might be untimely.

Clinical manifestations of coronavirus 2019 disease (COVID-19) in children are considered to be milder than in adults, given that fever, cough, and respiratory fatigue have been reported in 73% of affected children compared to 93% of adults [1], with severe/critical disease developing in 6% [2]. In Italy about 4% of affected children (mainly those younger than two years) required hospital admission, and no fatal outcome occurred [3].

Reasons for different susceptibility are unknown, and they may be possibly ascribable to the relatively immature and inexperienced immune system, reduced SARS-CoV-2 tropism across pediatric upper airway (ACE2 receptors are upregulated by smoking, hypertension, and COPD) [2], anatomic barrier exerted by hypertrophic lymphoid tissue overwhelming respiratory epithelial viral binding sites.

However, gastrointestinal complaints are comparable in pediatric and adult case-series. Some reports have been recently received regarding the possible association between pediatric multi-systemic inflammatory syndrome and SARS-CoV-2 infection [4], and new findings suggest that bacterial superinfection would be more frequent in children [5]. So, clinical pattern of presentation of pediatric COVID-19 is still evolving and the real burden of disease in the pediatric age is not completely understood, but all that prompt us to question about the truth of the assumption that susceptibility and aggressiveness of SARS-CoV-2 would be reduced in children.

In Italy, and in particular in our Region Lombardia, since the beginning of COVID-19 breakdown at the end of February, any medical activity other than those related to emergency or judged to be of critical importance for the patients well-being have been postponed, including any pediatric ENT activities. Immediately after the lockdown, on May 4th, we have been requested to progressively resume medical services including outpatient assessment and to plan surgery for children with ENT surgical priority (i.e. to be treated within 60 days). The Italian Society of Otolaryngology and Head and Neck Surgery gave some practical recommendations for the management of children with ENT disease [6], by limiting outpatient visit to the sole urgent cases or those

requiring short-term evaluation on the basis of priority on regional recipe. Adenotonsillectomy for children with severe obstructive sleep apnoea syndrome (OSAS), cochlear implantation, and surgery for persistent otitis media with effusion (OME) determining negative impact on language were considered the only elective surgical procedures to be planned [6] (priority surgery). Before COVID-19 era, our pediatric ENT surgical waiting list categorized patients as: A) children to be operated within 30 days; B) children to be operated within 60 days; C) children in whom surgery could be performed in the medium/long-term (> 60 days). Code A mainly included children with: large adenotonsillar hypertrophy with documented OSAS or suspected OSAS in syndromic disease; adenoidal hypertrophy with persistent OME and bilateral hearing impairment with language acquisition delay; adenoidal hypertrophy with tympanic membrane atelectasis and hearing impairment; large asymmetric tonsillar hypertrophy; middle ear cholesteatoma. Code B mainly included adenotonsillar hypertrophy with very frequent infections requiring monthly antibiotic prescription or antibiotic prophylaxis during winter; recurrent acute tonsillitis in children with periodic fever-aphthous stomatitis-pharyngitis-adenopathy syndrome; previous peritonsillar abscess.

To follow the national strategic plan [6], we screened our surgical waiting lists considering these parameters. To achieve this result, the recent (< 90 days) medical records of patients were assessed when available; if not, telemedicine by means of telephone call by a resident physician was used. This led to identification of 47 children candidates to priority surgery among 358 children globally waiting for surgery, and to update our surgical waiting list on the basis of clinical improvement/recovery or parents' decision to avoid/postpone surgery (152 children dropping out for subjective improvement, request for pediatric or ENT reevaluation, surgery yet performed elsewhere) (Table 1).

Sixteen children (34%) selected for priority surgery should undergo microdebrider-assisted extracapsular tonsillectomy, but recent international recommendations suggest to avoid the use of powered

<https://doi.org/10.1016/j.ijporl.2020.110145>

Received 14 May 2020; Received in revised form 25 May 2020; Accepted 25 May 2020

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Table 1

Categorization of patients placed under surgical waiting list before COVID-19 breakdown and during pandemic.

	Code	No. of patients
Pre-COVID-19	A	41
	B	300
	C	17
	Tot.	358
During COVID-19	Priority surgery	47
	Non-priority surgery	159
	Tot.	206
	Dropped out	152
	Tot.	358

instrumentation in order to reduce aerosol generation [7] thus opening the way to restoration of traditional tonsillectomy; at the same time, powered-assisted adenoidectomy could give way to traditional cold adenoidectomy with potential impact in terms of peritubaric adenoidal recurrence [8].

With regard to the recovery of outpatient medical activity, it should be considered that upper respiratory tract infections are extremely frequent in the pediatric age, especially in children with adenoiditis, and they are completely indiscernible from COVID-19 respiratory complaints. In Italy about 3750 pediatric cases have been reported, most of whom (68.93%) occurring in children aged 7–17 years [3]. However, the real prevalence of SARS-CoV-2 infection among children is unknown and probably largely underestimated given the presumably high rate of asymptomatic carriers. So far, no homogeneous national health surveillance or screening programs are currently ongoing or have been conceived to test susceptible population among children and healthcare workers in preparation of coming down to routinely daily activities. Furthermore, non-serologic diagnosis is not completely accurate in the pediatric age. In particular, nasopharyngeal swab execution in children is not so simple given the fact that reduced compliance during this unpleasant manoeuvre could result in swab contamination, inadequate collection into the nasal fossa rather than the nasopharynx, thus accounting for false negative results or bleeding. Dispersal or aerosolized infected droplets with nosocomial transmission is another important drawback especially in children where inhibition of cough reflex is ineffective. Non-enhanced chest computed tomography (CT) has been considered in the Dutch pre-operative guidelines as an option to assess the COVID-19 status in the adult patients [9]. Given the difficulty in identifying infected children without respiratory complaints and select among them candidates for routine clinical activities, a paper recently published on the flagship scientific journal of the European Respiratory Society focused about the role of chest CT as screening tool in the pediatric age [10]. The Authors [10] concluded that a negative CT finding does not rule out SARS-CoV-2 lung infection, and therefore this diagnostic modality should not be used to screen children with no or mild respiratory symptoms.

In addition, diagnostic strategies should be applied not only to the patients but also to caregivers and relatives, given that the adherence to hygienic measure of infection control and social distancing are difficult to be applied in the pediatric age.

Under these circumstances, particularly in regions with a remarkable SARS-CoV-2 circulation, are we sure to be ready to start again?

Funding

None.

Ethics approval

Not applicable.

Declaration of competing interest

Nothing to declare.

References

- [1] Centers for Disease Control and Prevention, Coronavirus disease 2019 in children-United States, February 12-April 2 <https://www.cdc.gov/mmwr/volumes/69/wr/mm6914e4.htm>, (2020), Accessed date: 9 May 2020.
- [2] Y. Dong, X. Mo, Y. Hu, X. Qi, F. Jiang, Z. Jiang, S. Tong, Epidemiology of COVID-19 among children in China, *Pediatrics* 16 (2020) e20200702 <https://doi.org/10.1542/peds.2020-0702>.
- [3] Istituto Superiore di Sanità, Epidemia COVID-19. Aggiornamento nazionale 7 maggio 2020, <https://www.epicentro.iss.it/coronavirus/bollettino/Bollettino-sorveglianza-integrata-COVID-19-7-maggio-2020.pdf>, Accessed date: 9 May 2020.
- [4] New York City Health Department, Health alert #13: pediatric multi-system inflammatory syndrome potentially associated with COVID-19, <https://www1.nyc.gov/assets/doh/downloads/pdf/han/alert/2020/covid-19-pediatric-multi-system-inflammatory-syndrome.pdf>, (2020), Accessed date: 9 May 2020.
- [5] W. Xia, J. Shao, Y. Guo, X. Peng, Z. Li, D. Hu, Clinical and CT features in pediatric patients with COVID-19 infection: different points from adults, *Pediatr. Pulmonol.* 55 (2020) 1169–1174 <https://doi.org/10.1002/ppul.24718>.
- [6] Società Italiana di Otorinolaringoiatria e Chirurgia Cervico-Facciale, Piano strategico per la gestione del paziente ORL durante il periodo di transizione a seguito della pandemia COVID-19, <https://www.sioechcf.it/piano-strategico-per-la-gestione-del-paziente-ori-durante-il-periodo-di-transizione-a-seguito-della-pandemia-covid-19/>, Accessed date: 9 May 2020.
- [7] D.V. Bann, V.A. Patel, R. Saadi, N. Goyal, J.P. Gniady, J.D. McGinn, D. Goldenberg, H. Isildak, J. May, N.N. Wilson, Best practice recommendations for pediatric Otolaryngology during the COVID-19 pandemic, *Otolaryngol. Head Neck Surg.* 28 (2020) 194599820921393 <https://doi.org/10.1177/0194599820921393>.
- [8] P. Capaccio, S. Torretta, G. Marcianite, P. Marchisio, S. Forti, L. Pignataro, Endoscopic adenoidectomy in children with otitis media with effusion and mild hearing loss, *Clin. Exp. Otorhinolaryngol.* 9 (2016) 33–38 <https://doi.org/10.21053/ceo.2016.9.1.33>.
- [9] European-African Hepato-Pancreato-Biliary Association (E-AHPBA), Practice Guideline. Preoperative work up on possible COVID-19 infection in asymptomatic patients, <http://eahpba.org/wp-content/uploads/2020/04/Practice-Guideline-Preoperative-work-up-on-possible-COVID-19-infection-in-asymptomatic-patients.pdf>, Accessed date: 25 May 2020.
- [10] P.J.F.M. Merkus, W.M. Klein, Value of chest CT as COVID 19 screening tool in children, *Eur. Respir. J.* (2020), <https://doi.org/10.1183/13993003.01241-2020>.

Sara Torretta*

Department of Otolaryngology and Head and Neck Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy
Department of Clinical Sciences and Community Health, University of Milan, Milan, Italy
 E-mail address: sara.torretta@unimi.it.

Pasquale Capaccio

Department of Otolaryngology and Head and Neck Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy
Department of Biomedical Surgical Dental Science, University of Milan, Milan, Italy

Michele Gaffuri

Department of Otolaryngology and Head and Neck Surgery, Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy

Lorenzo Maria Gaini

*Department of Otolaryngology and Head and Neck Surgery, Fondazione
IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy*

Marco Borin

*Department of Otolaryngology and Head and Neck Surgery, Fondazione
IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy
Department of Clinical Sciences and Community Health, University of
Milan, Milan, Italy*

Antonella Maruca

*Department of Otolaryngology and Head and Neck Surgery, Fondazione
IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy
Department of Clinical Sciences and Community Health, University of
Milan, Milan, Italy*

Ludovica Battilocchi

*Department of Otolaryngology and Head and Neck Surgery, Fondazione
IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy
Department of Clinical Sciences and Community Health, University of*

Milan, Milan, Italy

Letizia Nitro

*Department of Otolaryngology and Head and Neck Surgery, Fondazione
IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy
Department of Clinical Sciences and Community Health, University of
Milan, Milan, Italy*

Paola Marchisio

*Pediatric Highly Intensive Care Unit, Fondazione IRCCS Ca' Granda
Ospedale Maggiore Policlinico, Milan, Italy
Department of Pathophysiology and Transplantation, University of Milan,
Milan, Italy*

Lorenzo Pignataro

*Department of Otolaryngology and Head and Neck Surgery, Fondazione
IRCCS Ca' Granda Ospedale Maggiore Policlinico, Milan, Italy
Department of Clinical Sciences and Community Health, University of
Milan, Milan, Italy*

* Corresponding author. Department of Clinical Sciences and Community Health, Università degli Studi di Milano, Fondazione IRCCS Cà Granda Ospedale Maggiore Policlinico, Via F. Sforza 35, 20122, Milano, Italy.