



THE IMPACT OF COVID-19 PANDEMIC ON DIAGNOSIS AND TREATMENT IN OTORHINOLARYNGOLOGY PATIENTS IN CROATIA

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SUMMARY – COVID-19 pandemic resulted in a decrease in the number of diagnostic and therapeutic procedures in most ENT departments. We performed a survey among ENT specialists in Croatia aiming to assess how the pandemic influenced their practice, and consequently the patient diagnosis and treatment. The majority of the 123 participants who completed the survey stated that there was a delay in diagnosis and treatment of ENT diseases, which they expected to have negative effects on patient outcomes. Since the pandemic is still ongoing, there is the need for improvement at different levels of the healthcare system to minimize the consequences of the pandemic in non-COVID patients.

Key words: *COVID-19 pandemic; Non-COVID patients; ENT practice; Delayed diagnosis; Delayed treatment*

Introduction

The World Health Organization declared the SARS-CoV-2 pandemic on March 11, 2020. The pandemic reached Croatia on February 25, 2020, when the first patient tested positive for SARS-CoV-2. There were, and still are, many unknowns about this virus, its contagiousness, prevention of the disease, clinical presentation, possible treatment, and outcomes, compounded by its frequent mutations and subsequent variants. Otorhinolaryngology was recognized early as one of the clinical specialties at a high risk of potential professional exposure¹⁻³. Clinical practice among ENT specialists has therefore changed^{4,5}.

Early after the pandemic had started, we noticed a significant decrease in non-COVID referrals on our and other ENT departments due to several reasons (decrease in primary health care visits, fear among patients themselves, decrease in the capacity of ENT departments and hospitals in general, etc.). It was logical to anticipate that this would result in some consequences for patients.

Several cases of delayed diagnosis and treatment in non-COVID patients have been documented in our department as in other medical centers worldwide⁶⁻⁸. The aim of the present work was to perform an anonymous survey among Croatian ENT specialists to assess how the pandemic influenced the ENT practice in Croatia.

Methods

A questionnaire was sent to e-mail addresses of all registered otorhinolaryngologists in Croatia (300 e-mail

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addresses), and a reminder one month later. It was made using the QuestionPro web platform and was available for two months, from February 22 to April 22, 2021. Two types of questions were used, i.e., nominal questions and questions based on the Likert scale. Participants were asked about the most used source of information during the COVID-19 pandemic, satisfaction with available personal protective equipment (PPE), changes in the number of diagnostic and therapeutic procedures, and evidence for delay in diagnosis and/or treatment of different diseases in ENT. The complete questionnaire is reported in Table 1.

We received 123 completely answered and 157 partially answered questionnaires. Only complete responses were considered for analysis. Statistical analysis was performed using Jamovi free statistical software⁹.

Results

The majority of participants that completed the survey are employed at clinical hospitals or university hospital centers (57%) and general or regional hospitals (32%). The remaining participants are private practitioners (9%) or work only as ENT consultants at Community Health Centers (2%). At the beginning of the pandemic, the majority of physicians employed at tertiary health care institutions performed complete clinical examinations, including endoscopic

procedures, with the highest available level of PPE (41%), 29% of respondents performed only urgent examinations, and 27% of respondents continued normal clinical practice relying only on patient history data (possible exposure to COVID and symptoms) (Fig. 1). Cross-tabulation of answers showed similar distributions of these different clinical practices among ENT specialists regardless of the place where they work, level of health care they provide (secondary or tertiary), and their main source of information on COVID-19. Every third ENT specialist was quarantined due to professional exposure to COVID-19 (37%), and every sixth ENT specialist acquired COVID-19 infection due to professional exposure (16%).

The most common source of information used to guide clinical practice during the COVID-19 pandemic was internet (31%), followed by various ENT associations (29%), official employment institution instructions (25%), and consultation with colleagues (17%). Only 6% of participants used research papers as their primary and most used source of information. A large proportion of otorhinolaryngologists were satisfied or very satisfied (48%) or neutral (33%) regarding given instructions and PPE available at the workplace. Unsatisfied physicians were those that got most of their information about work during the pandemic from colleagues and internet.

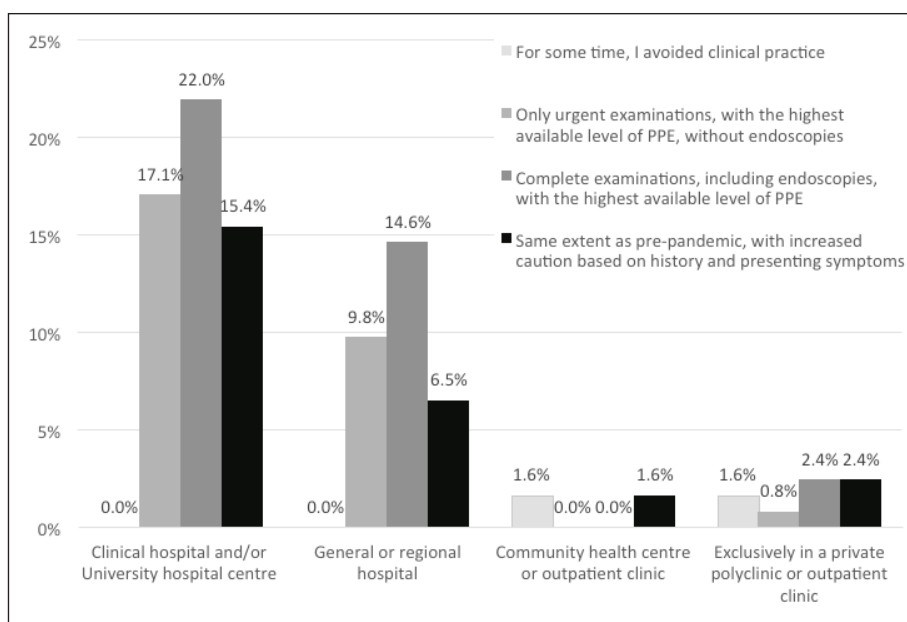


Fig. 1. Change in clinical practice in the first months of the pandemic among ENT specialists in different institutions.

Table 1. Questionnaire used in the survey

Question	(a)	(b)	(c)	(d)	(e)
Q1 How satisfied are you with instructions and recommendations about work during the COVID-19 pandemic?	Very satisfied	Satisfied	Neutral	Unsatisfied	Very unsatisfied
Q2 What was your most used source of information on working during the COVID-19 pandemic (guidelines, indications, personal protective equipment, testing for COVID, etc.)? (choose that best answer)	Your work institution	Your colleagues	ENT society	Information on internet	Research papers from ENT journals
Q3 How satisfied are you with the available personal protective equipment in your work institution (surgical masks, gowns, face shields, etc.)?	Very satisfied	Satisfied	Neutral	Unsatisfied	Very unsatisfied
Q4 In spring 2020, at the beginning of the pandemic, there were a lot of unknowns about SARS-CoV-2 infection (level of contagiousness, severity, etc.) and risks for medical workers. Choose an answer which describes your clinical practice during the first months of the pandemic.	a) For some time, I avoided clinical practice completely.				
	b) I only performed urgent clinical examinations, with the highest available level of personal protective equipment (FFP2 or 3, face shield, gown), without performing endoscopic procedures.				
	c) I performed complete clinical examinations, including endoscopic procedures, with the highest available level of personal protective equipment.				
	d) I performed clinical examinations and diagnostic procedures to the same extent, with increased caution based on a history non-indicative of COVID and lack of COVID-associated symptoms.				
Q5 To what extent were ENT examinations reduced during the COVID pandemic due to fewer patients coming in?	No change	Up to 25% reduction	25%-50% reduction	50%-75% reduction	Over 75% reduction
Q6 How much did your capacities for examinations and procedures reduce during the pandemic (due to any reason: need for a larger time allotment per patient, need for staff quarantine, lack of PPE, etc.)?	No change	Up to 25% reduction	25%-50% reduction	50%-75% reduction	Over 75% reduction
Q7 Were you quarantined due to professional exposure to COVID-19?	No	Yes, once	Yes, more than once		
Q8 Did you develop symptoms of COVID-19 due to professional exposure?	No	Yes, mild case	Yes, severe case, without consequences	Yes, severe case, with consequences	
Q9 In your opinion, did patients with head and neck cancers get delayed diagnosis and treatment due to the COVID-19 pandemic?	There was no delay	There was delay, but without consequences for patients	There were individual cases of significant delay and consequent worsening of the disease	There were many cases with significant delay, and consequences will be seen in the future	I cannot evaluate, I do not work in the appropriate field of ENT

Q10 In your opinion, did patients with chronic diseases (rhinosinusitis, polyposis, otitis, tonsillitis, non-cancerous diseases of thyroid gland, etc.) get delayed diagnosis and treatment due to COVID-19 pandemic?	There was no delay	There was delay, but without consequences for patients	There were individual cases of significant delay and consequent worsening of the disease	There were many cases with significant delay, and consequences will be seen in the future	I cannot evaluate, I do not work in the appropriate field of ENT
Q11 In your opinion, did patients needing aesthetic surgery (due to aesthetic and/or functional impairment such as septo-/rhinoplasty, non-cancerous skin changes, etc.) get delayed treatment due to the COVID-19 pandemic?	There was no delay	There was slight delay	There was extensive delay of this kind of procedures	I completely stopped performing these kinds of elective procedures	I cannot assess, I am not working in the given field of ENT
Q12 You are employed in:	Clinical hospital and/or university hospital center	General or regional hospital	Community health center or outpatient clinic	Exclusively in a private polyclinic or outpatient clinic	

The vast majority of respondents stated significant reduction in both the number of patient referrals and their capacities (Fig. 2). Only 4% of physicians had the same number of patients and 7% of physicians did not observe decrease in the capacity to admit patients.

When asked about delay in the diagnosis and treatment in particular fields in ENT practice, 44% of participants stated that there was delay in the diagnosis and treatment in patients with chronic ENT

diseases due to the COVID-19 pandemic but believed that this delay did not result in severe consequences for patients (Fig. 3). However, 62% of participants answered that there were many cases of significant delay in the diagnosis and treatment of patients with head and neck cancers that would have an impact on the patient outcomes (Fig. 4). During the first months of the pandemic, 37% of otorhinolaryngologists stopped performing elective surgery in patients with aesthetic

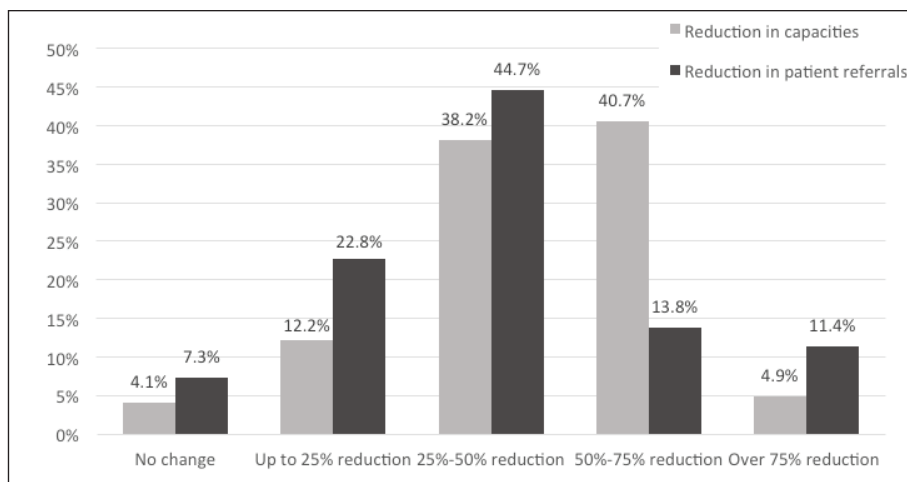


Fig. 2. Reduction in capacities and patient referrals.

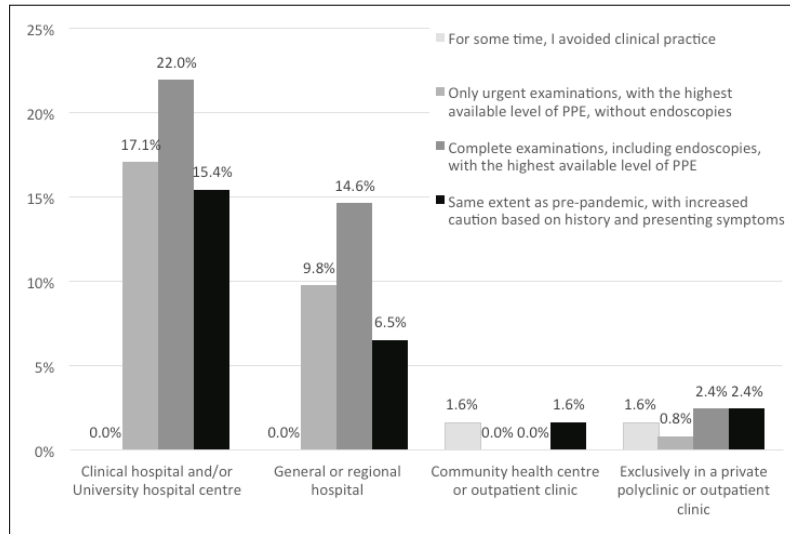


Fig. 3. Delay in the treatment of chronic ENT diseases.

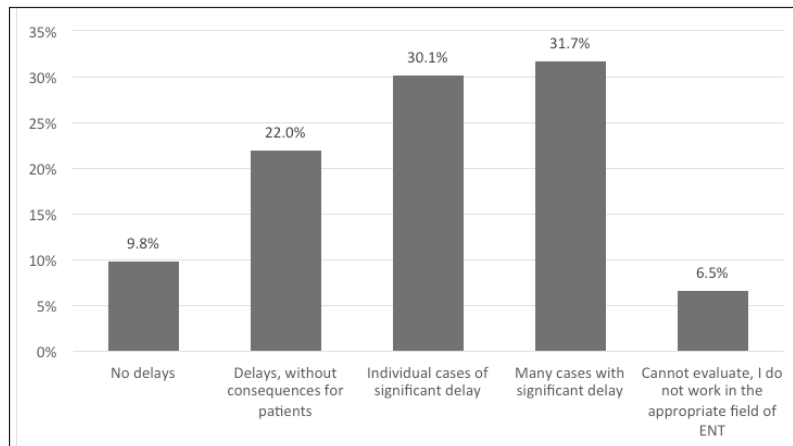


Fig. 4. Delay in the treatment of ENT cancers.

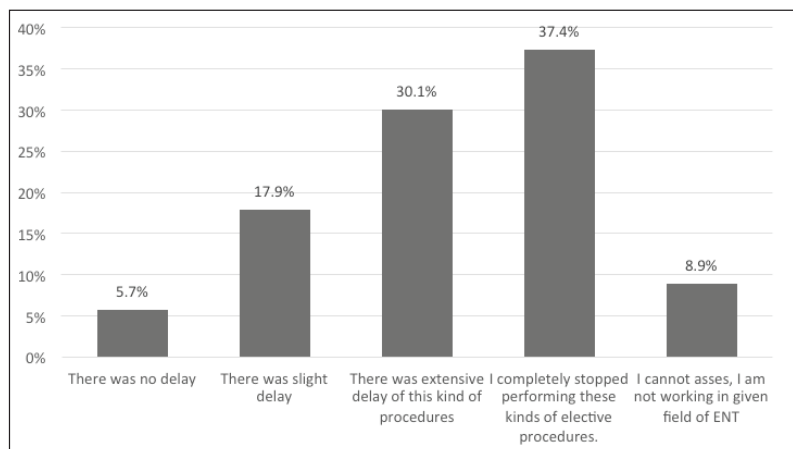


Fig. 5. Delay in the treatment of elective and aesthetic conditions in ENT.

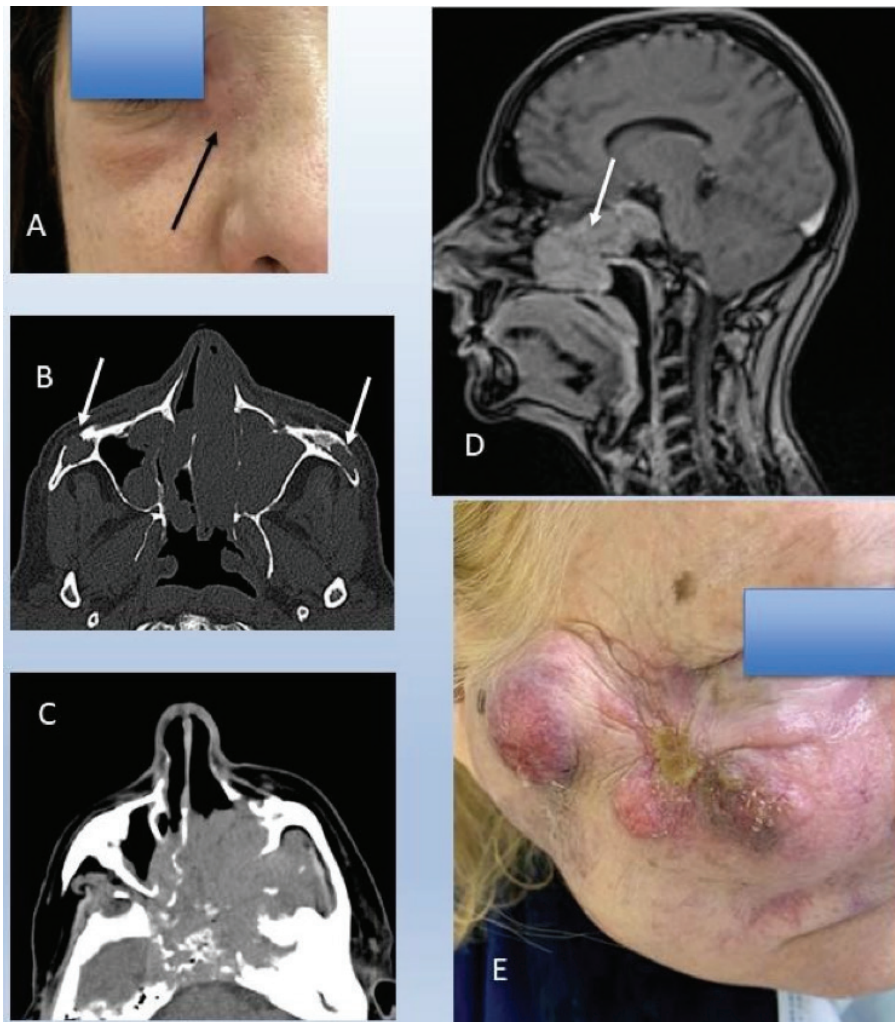


Fig. 6. Examples of delayed diagnosis of head and neck tumors: (A) carcinoma of nasal cavity spreading to skin (9 months of symptoms before diagnosis); (B) non-Hodgkin lymphoma with bone involvement (arrows) and 10 months of symptoms before diagnosis; (C) massive nasopharyngeal cancer, 5 months of symptoms before diagnosis; (D) giant hypophyseal adenoma with nasal extension, 6 months of symptoms before diagnosis; and (E) maxillary sinus carcinoma with cutaneous and facial nerve involvement, 8 months of symptoms before diagnosis.

and/or functional impairment (Fig. 5). Only 6% continued performing these procedures without delay. The rest of the respondents performed these procedures, but with significant delay in scheduling.

Discussion

At the beginning of the first pandemic wave in Croatia, many facts regarding the virus contagiousness, morbidity, prevention, outcomes, etc. were unknown. Consequently, a significant reduction in various diagnostic and therapeutic procedures was noted. Sev-

eral months after the beginning of the pandemic, we noticed an increase in the number of patients whose conditions might have been attributable to delay in the diagnosis or treatment of the initial medical condition. Examples of this are cases of odontogenic sinusitis, massive untreated polyposis, and several cases of advanced sinonasal tumors (Fig. 6). Since the overall number of them is generally low (complications of untreated diseases, sinonasal and especially advanced sinonasal tumors), a statistically significant increase due to some extrinsic cause will be hard to demonstrate

in a short time. It was the reason to perform a survey among the physicians who practice otorhinolaryngology. We think that the number of complete responses, which is nearly half of all working otorhinolaryngologists in Croatia, is representative to draw some valid conclusions.

The results of this survey confirmed that many ENT specialists shared our grim view regarding reduction in patient referrals, thus compromising patient welfare in terms of diagnosing and treating various ENT medical conditions. During the pandemic, the focus of medical interest and capacities shifted to COVID patients¹⁰. As a result, many non-COVID patients experienced difficulties in obtaining primary and secondary health care. We are aware that, even before the pandemic, there was delay in the diagnosis of many ENT malignancies¹¹. The main reason for the delay is that the symptoms of ENT tumors in the early phase are usually mild and overlapping with the symptoms of chronic inflammatory diseases. According to our tumor patient data, the duration of symptoms prior to obtaining the diagnosis is approximately two months, and in some cases several months, which is in accordance with literature data¹². Several models aiming to reduce the time from initial symptoms to definitive treatment have been introduced in different countries. Examples are The Two-Week Rule for Head and Neck Cancers in the United Kingdom in 2000¹³ and The Danish Fast-Track for Head and Neck Cancers in 2007¹⁴. In our tertiary center, there was also an established fast-track program in which patients with head and neck cancer would be treated within 2 to 3 weeks from initial referral. The pandemic reorganization of our department did not adversely affect this interval.

Although the pandemic will likely end at some point, it is still active at the time of writing this paper. Furthermore, there are reasonable fears of a similar event occurring in the future, and preparations have already begun¹⁵. In this context, there should not be any doubt regarding the necessity for reorganization of health care systems, particularly with the aim of improving the availability of health care at secondary and tertiary centers.

We believe there is room for improvement based on several facts which are elaborated below. Our data showed that patients with protracted symptoms did not get appropriate referral in a timely manner. Although patient history and symptoms, without clinical

and endoscopic examination, are insufficient for an accurate diagnosis, especially given that symptoms of early tumors overlap with other chronic and inflammatory diseases, carefully taken history (especially if taken by an experienced ENT specialist) may serve as an appropriate screening method for detecting patients in need of a prompt clinical examination. In addition, an important reason for reduction of capacities during the pandemic was very likely the need for quarantine of physicians, nurses, and patients after contact with a COVID-positive person or contracting COVID-19 infection without necessarily developing severe (or any) symptoms. This means that many of those isolated, both patients and health care workers, were not ill, but will be unavailable for diagnostics and treatment of non-COVID patients. While their quarantine was necessary, these extensive time periods could have been used for telephone or even video-call consultations and evaluations by selected specialists. Technical requirements are already fulfilled since access to telephones and camera-enabled mobile devices is ubiquitous today. The only remaining task would be developing an organizational framework for such consultations.

In conclusion, the COVID-19 pandemic brought forth many challenges for the health care system and resulted in many restrictions and their consequences. Along with the heavy disease burden of COVID-19 itself, our survey shows that many experts believe the buckling of the health care system has reflected intensely on non-COVID patients. This pandemic has shown that we must be able to adapt faster to similar situations and reduce the potential negative impact on our patients.

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Sažetak

UTJECAJ PANDEMIJE COVID-19 NA DIJAGNOSTIKU I LIJEČENJE OTORINOLARINGOLOŠKIH BOLESNIKA U HRVATSKOJ

A-M. Vargantolić, M. Pastorčić Grgić i M.V. Grgić

Pandemija COVID-19 rezultirala je smanjenjem dijagnostičkih i terapijskih postupaka u većini ORL odjela. Proveli smo anketu među otorinolarinolozima u Hrvatskoj s ciljem procjene kako je pandemija utjecala na njihov rad te posljedično na dijagnostiku i liječenje bolesnika. Većina od 123 liječnika koji su u cijelosti odgovorili na upitnik utvrdila je da postoji kašnjenje u dijagnostici i liječenju ORL stanja, što će po njihovom mišljenju imati posljedice na zdravlje bolesnika. Budući da je pandemija još u tijeku postoji potreba za poboljšanjem svih razina zdravstvenog sustava kako bi se smanjile negativne posljedice koje pandemija ima za ne-COVID bolesnike.

Ključne riječi: *Pandemija COVID-19; Ne-COVID bolesnici; ORL praksa; Zakašnjela dijagnoza; Zakašnjelo liječenje*