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Impact of COVID-19 on rhinology practice: a global survey

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ABSTRACT

Background: The impact of COVID-19 on healthcare services has resulted in significant changes in day to day practice in order to reduce the virus transmission and protect the public and the healthcare professionals. Rhinologists are at higher risk of contracting the virus as they are regularly exposed to the aerosols generated during out-patient and surgical procedures. The aim of the survey was to identify the impact of COVID-19 on various aspects of rhinology practice and the changes instituted to mitigate the risks.
Methods: An anonymous email survey was developed and circulated among otolaryngologists from around the world.
Results: A total of 162 responses from 44 countries were included in the analysis. 63% of the respondents attended only emergent, urgent and time sensitive cases in the outpatient setting with introduction of various screening methods. Over 88% respondents were carrying out aerosol-generating procedures (AGPs) in their rhinology clinics. 67.39% respondents had not operated on any COVID-19 positive patient at the completion of the survey. Preoperative COVID testing and self-solation protocols differed as per the local hospital policy. 16 rhinologists reported a member of their team becoming positive after AGPs and 9 becoming positive after being involved in surgical procedures. Online teaching sessions were the most preferred (74.38%) mode of continued medical teaching/ training around the world.
Conclusions: Data analysis revealed that most rhinologists followed the suggested guidelines by various ear, nose and throat (ENT) national organisations like ENTUK, the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS) etc. in their practice and also provided insight into some of the deficiencies which need improvement as the pandemic continues to affect the global practice.

Keywords: COVID-19, Coronavirus, Rhinology, Otolaryngology, Aerosol generating procedure, Pandemic

INTRODUCTION

Coronavirus (COVID-19) has affected more than 121 million people in more than 188 countries, resulting in excess of 2.6 million deaths as of 20 March 2021.[1] It is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) which was first identified in December, 2019 in Wuhan, China and was declared a public health emergency of international concern on 30 January 2020 and subsequently a pandemic on 11 March 2020.[2] The virus resides in the upper respiratory tract, with high viral loads in the nose and nasopharynx and is transmitted by aerosolised droplets which remain suspended in air for prolonged periods.[3] Health care professionals particularly otolaryngologists, dentists and anaesthetists have been categorised as high risk as they are exposed to these aerosolised particles during examination, surgery and related procedures.[3,4] This was particularly highlighted early on in the initial stages of the pandemic when a whole team of surgeons and staff contracted COVID-19 while carrying out a trans-nasal resection of pituitary adenoma in Wuhan, China. Thereafter, many such reports have emerged from Iran, Italy, United Kingdom, etc. of otolaryngologists who became infected after carrying out aerosol generating procedures (AGP).[5]

In view of the above, ENT and rhinology societies from around the world have formulated guidelines and protocols according to the regional requirements to reduce virus transmission amongst patients and healthcare professionals.[6-8] These have been regularly updated in view of evolving evidence. The pandemic has entered a phase where, at the time of writing, many regions around the world are now entering either a second or a third wave.

We conducted a survey with the aim to understand the effect of the COVID-19 pandemic on rhinology practice during the first wave that occurred in the initial half of 2020. The goal was also to ascertain the adherence to common protocols and guidelines amongst the practising rhinologists and the changes implemented in different outpatient and operative settings, so that these responses provide a snapshot into the real time and provide valuable guidance in the future management of rhinology practice to benefit all health professionals and patients.

METHODS

A web-based survey was conducted from 01 June 2020 to 30 June 2020. The questionnaire was developed using the "SurveyMonkey" (www.surveymonkey.com) platform as it provides feedback at scale and in real time. The questionnaire was then distributed via email among rhinologists around the world. The respondents' informed consent was asked for the handling and collection of the data for research purposes and further analysis.

The questionnaire consisted of a brief introduction and included five sections with a total of 44 multiple choice questions. The respondents had the option to choose more than one choice and provide additional information for the answers if required. The first section collected general demographic and professional information the participants.

The second part aimed to explore the impact of the COVID-19 outbreak on the outpatient services of rhinology clinics. The respondents were asked to explain what precautions/changes were occurring in the hospital or clinics and the measures adopted to protect staff and patients. The third section was designed to collect information about the changes in performing AGPs in suspected and/or confirmed COVID-19 patients compared to non-COVID-19 patients.

The fourth section focussed on precautions and protocols followed while carrying out surgical procedures (COVID-19 versus non-COVID-19 patients) during the outbreak and the changes in follow-up for these patients.

Lastly, participants were asked to share data about any healthcare worker in their team who has been affected while on duty and also to enumerate the changes in medical education platforms. The detailed survey with the responses has been recorded.

The respondents who completed 3 sections or more were included in the study and analysed. The results were plotted as graphs and charts using SurveyMonkey platform itself and extrapolated onto Excel (Microsoft) and analysed.

The terms personal protective equipment (PPE) used in the survey was defined in accordance with AAO-HNS: guidance for return to practice for otolaryngology-head and neck surgery and the prioritization of the patients and procedures into categories: emergent, urgent, time-sensitive and routine used in the survey was also done according to the same guidelines.[7,8]

RESULTS

A total of 1640 invitations were sent and 241 responses were received (response rate of 14.6%). 41 were excluded as they did not fully consent to participate, while 38 were excluded due to incomplete responses (those who completed fewer than 3 subsections out of 5). Therefore, a total of 162 responses from 44 countries were finally included in the analysis.

Demographics and professional data

The maximum responses were received from the United Kingdom followed by France, Germany, Italy (Figure 1). Out of the total, 51.2% of the participants worked in Public University Hospital, 30.2% in private clinics, 16.6% each in non-academic public hospital & non-academic private hospital and 10.49% in private university hospital. More than 80 percent of the respondents managed COVID-19 positive patients in their practice. Only 14 respondents (8.92%) had managed more than 10 COVID-19 positive patients, while the majority (71.34%, n=112) of respondents had managed fewer than 10.

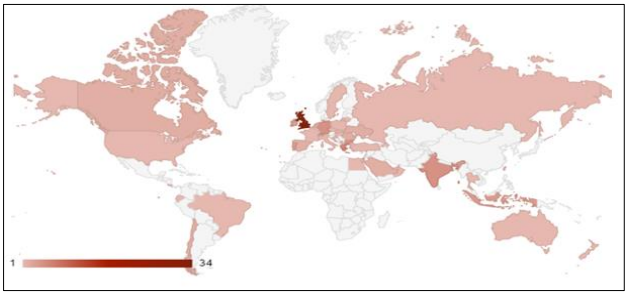

Figure 1: Map depicting spread of responses from around the world.

Outpatient setting

63% (n=99) of the respondents attended only emergent, urgent and time sensitive cases whereas, almost 20% (n=31) still consulted routine patients in their practice and 17 (10.83%) participants completely shut down their outpatient clinics. The most common screening protocol for patients prior to attending the clinics was temperature

check (59.87%) followed by screening via telephonic call or mobile app (55.4%) and screening via questionnaire in clinic (54.7%). 15 (9.5) centres had mandatory COVID-19 testing prior to the clinic appointment.

Many measures were introduced and implemented to deal with the pandemic in rhinology clinics, particularly if suspected/confirmed to be COVID-19 positive (Table 1). 64% (n=100) of the participants were using full PPE while seeing patients in clinics, regardless of their COVID-19 status. However, if the patient was suspected/-confirmed of COVID-19, full PPE was worn by 88.4%. 4 respondents reported using only surgical masks while seeing such patients.

AGPs

Over 88% (122/138) respondents were carrying out AGPs in their rhinology clinics. 70% of the participants did not perform AGPs on the routine patients (Figure 2). The most common methods of topical anaesthesia were the pledget based (38.4%) and manual low pressure based (28.2%) in the survey. 55% of the participants carried out COVID-19 testing before carrying out AGPs. Out of these, 20% had mandatory testing for every patient and 35% had COVID-19 testing if the patient was suspected of the same. 62 (45%) respondents performed AGPs without any prior testing (Figure 3). The summary of measures introduced while performing AGPs have been depicted in Table 2. With respect to usage of PPE, 10 respondents used only a simple surgical mask while performing AGPs, while the remainder used full PPE. The AGPs were carried out in normal pressure ventilation rooms by 80 (57.97%) respondents. Ten respondents carried out AGPs in negative pressure ventilation rooms and another 10 used rooms fitted with high efficiency particulate air (HEPA) filters while performing AGPs. The average turnover time between the AGPs was between 20 and 30 minutes (n=88). There was no waiting period in between the two procedures at their centres as reported by 17 respondents.

Surgical procedures

Cases operated

67.39% (93/138) respondents had not operated on any COVID-19 positive patient at the completion of the survey. 13.7% (19/138) respondents were operating on routine cases during the current pandemic. Most of the centres performed emergent/-urgent or time-sensitive surgeries with 25.36% (35/138) dealing with emergent operations only (Figure 4).

Pre-operative COVID-19 testing protocol

81.33% (n=113) centres did mandatory COVID-19 testing before surgery. A single COVID-19 test prior to surgery was done in 72.4% (100/138) centres and 27 centres (19.5%) did two tests before surgical intervention. In addition, pre-operative self-isolation of either 1 or 2 weeks was being practiced in over 50% of the centres. If tested positive, 18.84% chose to defer surgery in these cases whereas 51.4% postponed the operation in only non-emergency cases.

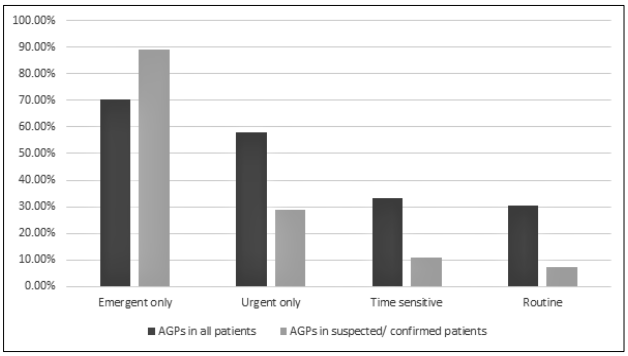

Figure 2: Comparison of AGPs performed in all patients versus suspected/confirmed patients.

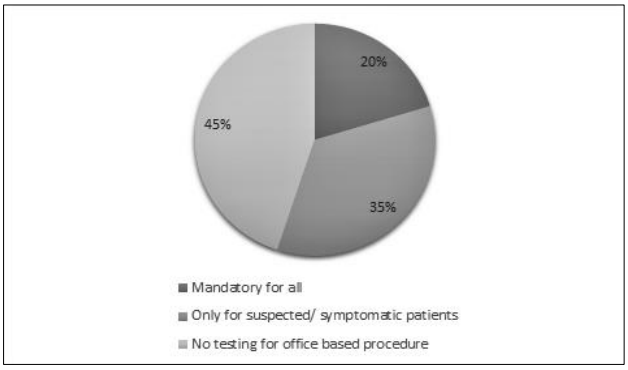

Figure 3: COVID testing prior to AGP.

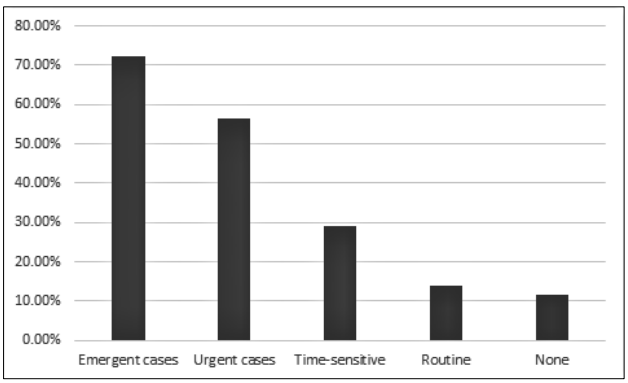

Figure 4: Cases operated by the respondents.

Additional pre/intra-op measures

Povidone iodine nasal wash was being advised to patients in the pre-operative period (n=13). Measures such as double tented technique of draping (10.14%, n=14) and intra-operative betadine nasal/oral wash had been practiced at some centres (18.84%, n=26). 30 centres discontinued the usage of powered instruments during surgery and 44 centres reserved their use for

emergent/urgent surgeries only. 70% of the departments also limited the presence of the staff members in the theatres as compared to pre-COVID-19 times.

Post-op period

The hospital stay remained the same as in 64.4% centres, it was reduced in 15.22% and increased in 4.35% as compared to that in the pre-COVID-19 times. The complications rate remained same at 101 centres (73.19%) and only 1 centre reported increase in complications.

General considerations

16 rhinologists reported a member of their team becoming positive after AGPs and 9 becoming positive after being involved in surgical procedures. 46.2% also reported team members being redeployed to non ENT COVID-19 duties in their institutions.

Online teaching sessions were the most preferred (74.38%) mode of continued medical teaching/ training around the world.

Table 1: Measures introduced in practice/clinics (n=157).

Measures	Percent	n
Masks for all patients	78.98	124
Limiting number of patients	75.16	118
Limiting clinic attendance by triaging	65.61	103
Limiting patients/ attendants by telephonic/video consultation	57.96	91
Isolation areas for suspected positive patients	47.13	74
Dedicated rooms for aerosol generating procedures	35.03	55
Negative pressure rooms	8.92	14
Other (please specify)	5.73	9
Standard precautions only. No extra precautions were used	4.46	7

Table 2: Measures introduced while performing AGPs (n=138).

Measures	Percent	n
Endoscopy using camera and television monitor	75.36	104
Mask worn by patients during procedure if feasible	75.36	104
Sanitisation and cleaning of room after every patient	58.70	81
Sanitisation and cleaning of room for only suspected/positive patient	23.19	32
Disposable naso-endoscopes	9.42	13
Endoscopy without camera and television monitor	7.97	11

DISCUSSION

There is a potential of generating aerosols during rhinology procedures carried out in outpatient clinics or in operating theatres which can transmit virus particles and put team members at risk.[9] The international scientific societies have developed guidelines to mitigate the risk of virus transmission in order to protect patients, public and healthcare workers.[6-8,10] This paper focusses on investigating how rhinological practice has adapted to the challenge posed by the pandemic.

In line with recommendations by various rhinological societies, rhinologists across the world modified their usual practice by reducing non-urgent (elective) cases in their out-patient and surgical practice in order to reduce the risk for healthcare staff and also to redeploy manpower to acute specialties combating the outbreak.[6-8,10] However, few centres continued to provide routine services for elective patients. On further analysis, we found that the regional prevalence rate in those centres was very low at the time of survey.

To decrease the risk of virus transmission in the out-patient clinics, it is recommended to triage the patients with the aim of reducing the clinic attendance and thereafter, the patients deemed appropriate for attendance should undergo further screening(non-touch temperature checks and screening questionnaire) prior to consultation.[6,7,11] Furthermore, implementation of appropriate social distancing measures, face covering where feasible and separate waiting and consultation areas for suspected patients have also been emphasised in the guidelines. In our survey, the most commonly used screening tools were fever checks, questionnaire either via app/telephone call or on arrival, while some also implemented COVID-19 testing prior to visit, although this is not mandatory as per the guidelines.[6,7] Apart from these measures, most of the centres adopted the practice of remote telephone/video consultations.

For aerosol generating procedures carried out in out-patient clinics, the results of the survey showed that majority of the respondents used camera and stack during endoscopy which increases the physical distance between the patient and the clinician as per the guidelines.[6,7,11]

Additionally, patients were requested to wear masks during the procedure (>75% of respondents) as a barrier to further reduce the risk of aerosol transmission.[6] Most clinicians used pledget-based topical anaesthesia or manual low pressure spray for office based AGPs rather than high pressure atomizers to reduce aerosolization.

To reduce the risks of virus transmission, it is recommended to carry out AGPs in negative pressure rooms preferably with HEPA filters.[6,11] The results of the survey showed that most of the centres did not observe this and the reason could be the limitation of existing infrastructure at the local level and any changes are difficult, expensive and could take long time for implementation . The guidelines also suggest sanitization of the room between two procedures irrespective of the COVID-19 status which was followed by 58.7% of respondents in our survey. The average turnover time varied from 20 to 60 minutes in our survey and is based on the local hospital guidelines. The turnover time is determined by the room pressure and air changes per hour (ACH). Rooms that changes air content multiple times per hour is viewed as the ideal and it is known that it takes 5-6 air changes to remove 99% of airborne particles.[12]

Next, most of the centres responded to the pandemic by postponing their routine surgical procedures and in our survey, most of the centres carried out only emergent/urgent procedures. The decision to proceed with the operation depends on urgency and has to be weighed against the impact of postponement on patient's health and survival.[6,8,14]

National institute for health and care excellence (NICE) guidelines recommends comprehensive social distancing for 14 days before admission. The guidelines also recommends one COVID-19 test no more than 3 days prior to admission and subsequent self-isolation from the day of test to admission.[13] In our survey, pre-operative COVID-19 testing was done in over 80% of the centres and secondly, the self-isolation of patients prior to surgery has been included as part of their protocol by 52.8% of surgeons (one week by 12.3% and 2 weeks by 40.5%).[7,15,16]

A number of additional measures adopted in the pre and/or intra-operative period have been shown to further decrease virus transmission. Povidone iodine nasal and oral wash before and during surgery has been shown to inactivate Corona virus when applied for as little as 15 seconds.[17] Some centres (10.14%) used the barrier technique of draping (tent technique) to reduce the escape of aerosols into the operating room and therefore virus spread.[18,19] A significant decline in the use of powered instruments (powered drills and microdebriders) was noted as these are considered high risk procedures with respect to aerosolization, in particular microdrills and many centres limited their use to only emergent/urgent surgeries.[20,21] Furthermore, most of the centres (>70%) tried to minimise the healthcare staff presence in the operation theatres to reduce the spread of disease.

The definition of optimal PPE has been evolving during the pandemic and varies between regions. The use of masks/ respirators with filtration fraction of 95% and above (N95/KN95/N99/FFP2/3/PAPR) with eye shields, gown and gloves have been agreed as an essential requirement of PPE in rhinology practice.[7,11,14] In our survey it was found that rhinology surgeons all around the world are using full PPE while interacting with the patients during out-patient visits, AGPs or surgeries. However, we note that few of our colleagues have been using simple masks while carrying out the consultations or procedures. This is a marked departure from the guidelines which recommends masks with >95% filtration fraction for all the patients in view of the asymptomatic carriers.

During our survey, 16 respondents reported that their team members had acquired infection after carrying out AGPs in clinics while 9 reported contracting COVID-19 after surgical procedures. This is a substantial figure in view of limited number of medical staff and therefore, every precaution has to be taken to ensure safety in order to provide an uninterrupted delivery of services to the community.

Alternate ways of communication/ consultation have been stressed upon in order to provide continuous services while taking all the necessary precautions.[22] One such tool is telemedicine which has been increasingly used in many centres for out-patient consultation and surgical follow-ups. Medical education/training methods have gradually shifted from classic face-to-face teaching to online sessions such as webinars.

Our study did have its limitations, for example, the survey did not have equal representation from all the continents, but had a significant skew towards European respondents. The survey was available only in English and this would have introduced a biased representation of English speaking countries. As the survey has been conducted in the middle of the pandemic, with different countries in different stages, further studies are required to get a true picture.

CONCLUSION

These are the unforeseen times for the whole medical fraternity as well as public and patients. There is a need for global partnership to enable the swift exchange of information and knowledge in order to modify the existing guidelines and ensure a safe return to routine practice which is inevitable. The survey displayed the awareness and seriousness among rhinologists with respect to the COVID-19 pandemic which has been reflected by the steps taken to alter every aspect of their practice to decrease the spread of contagion. The survey also highlighted the innovation being carried out at different levels to deal with the virus. The second wave has already

hit many regions around the world and we hope the results of the survey will provide the opportunity to modify our practice for the safety of the healthcare professionals and patients whilst ensuring a minimal impact on routine clinical works. Further studies and research is the need of the hour to tackle these future challenges.

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