



Research Article

DEMOGRAPHIC PROFILE AND OUTCOME OF NEUROSURGERY IN COVID POSITIVE PATIENTS, A TERTIARY CARE CENTRE EXPERIENCE

Lt Col Anand Gupta¹, Brig S.S Jaiswal², Maj Chaitanya Verma³ and Pranjal Gupta⁴

¹Neurosurgeon, Base Hospital, Delhi Cantt, Delhi

²Consultant and HOD Surgery, Base Hospital, Delhi Cantt, Delhi

³Department of Surgery, Base Hospital, Delhi Cantt, Delhi

⁴Intern, Base Hospital, Delhi Cantt, Delhi

ARTICLE INFO

Article History:

Received 15th January, 2022

Received in revised form 7th

February, 2022

Accepted 13th March, 2022

Published online 28th April, 2022

Key words:

COVID-19, neurosurgical procedures,

ABSTRACT

Introduction: Corona virus disease 2019 (COVID-19) is an exceedingly infectious, life threatening condition. The outbreak has created unprecedented and extraordinary threats and difficulties for societies and health care systems worldwide. In neurosurgical practice, intensive modifications have been required in surgical scheduling, administration of inpatient and outpatient clinics, management of emergency cases, and even in academic and educational activities. The authors analyzed the volume and spectrum of neurosurgery patients who underwent surgery at their institution during the period of COVID-19 related lockdown.

Methods: A retrospective review was performed of all COVID positive patients who had neurosurgery performed between March 2020 and May 2021 at our hospital which is a tertiary care center.

Results: In these trying times, performing emergency neurosurgical procedures was preferred over definitive surgeries and the outcome was encouraging. In view of COVID positive status, due precautions were taken while performing the surgeries which included the usage of PPE (Personal Protective Equipment) and PAPR (Positive Air Pressure Respirator), however there were drawbacks with usage of these equipment.

Conclusion: The surgical disciplines face substantial challenges during the COVID 19 pandemic and effects on surgical profession will be lasting. Many of the changes that have been instituted during the pandemic are the new reality, and the surgical community must learn to evolve with and accept these changes. Adaptability is the need of the hour, and the future of the profession depends on it. Taking adequate precautions and following a meticulous technique resulted in a positive outcome and delivered encouraging results.

Copyright©2022 Lt Col Anand Gupta et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Coronavirus disease 2019 (COVID-19) is an exceedingly infectious, life threatening condition. The outbreak has created unprecedented and extraordinary threats and difficulties for societies and health care systems worldwide.¹⁻³ The increased burden of this pandemic disease has substantially affected the entire health system, including neurosurgical practice in most countries.⁴⁻⁶ In neurosurgical practice, intensive modifications have been required in surgical scheduling, administration of inpatient and outpatient clinics, management of emergency cases, and even in academic and educational activities.

Hospitals and medical institutions have had to adapt to the 'new normal' by doing widespread COVID-19 testing, switching from physical out-patient department (OPD) to telemedicine and rescheduling of 'non-emergent' surgeries.⁷ However, there has been a concern amongst health-care

workers for patients who had their surgeries cancelled/postponed due to the ongoing COVID-19 pandemic. The authors analyzed the volume and spectrum of neurosurgery patients who underwent surgery at their institution during the period of COVID-19 related lockdown.

MATERIAL AND METHODS

A retrospective review was performed of all COVID positive patients who had neurosurgery performed between March 2020 and May 2021 at our hospital which is a tertiary care center.

Inclusion criteria

1. Individuals found to be SARS CoV-2 positive by nasopharyngeal swab polymerase chain reaction (PCR)/Gene Xpert.

*Corresponding author: Lt Col Anand Gupta
Neurosurgeon, Base Hospital, Delhi Cantt, Delhi

2. Patients who had a neurosurgical procedure performed

RESULTS

A total of 12 COVID positive patients underwent neurosurgical procedures since the beginning of pandemic. Out of them majority were male 8 (66.6%) as compared to 4 (33.3%) female patients. Age groups affected showed a trimodal distribution with most of the patients belonging to the age groups 20-30, 50-60 and beyond 70 (25% for each group) (Fig.1). The younger population are those who presented with traumatic brain injury with poor GCS and the outcome was fatal.

Subdural hematoma (SDH) was the commonest indication for surgery (58.3%) followed by the Cauda equina syndrome (16.6%) (Fig.2). Decompressive craniotomy was the commonest surgery performed (41.6%) followed by burr hole procedure (33.3%) (Fig.3). Out of all the patients who underwent surgery, 9 (75%) had successful recovery and 3 (25%) had a fatal outcome. Table 1 gives the pre operative patients characteristics and operative details and their outcome.

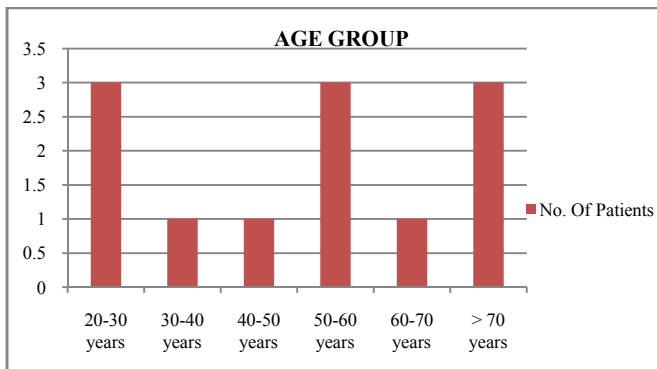


Figure 1 Patients age distribution

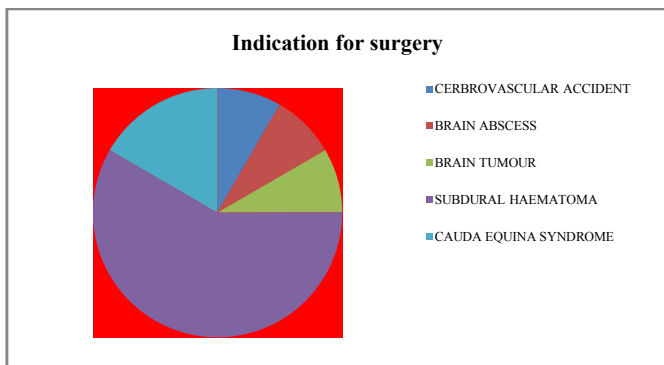


Figure 2 Indication for Surgery

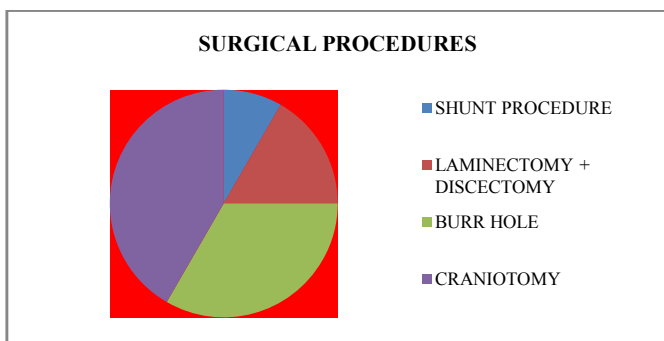


Figure 3 Neurosurgical procedure performed

Table 1 Patient characteristics & operative details

S No.	AGE	SEX	Diagnosis	GCS At Presentation	Surgery	Outcome
1	52	F	Posterior Fossa Tumor	E4V5M6	VP Shunt	Recovery
2	54	M	Left MCA Infarct	E4V2M5	Left Ftp Decompressive Craniotomy	Death
3	82	M	Acute On Chronic SDH Left	E4V3M5	Decompressive Craniotomy	Recovery
4	28	M	Left Ftp SDH	E1VTM1	Burr Hole	Death
5	27	M	Cauda Equina Syndrome		Laminectomy + Discectomy	Recovery
6	42	F	Cauda Equina Syndrome		Laminectomy + Discectomy	Recovery
7	23	M	Left Frontal Brain Abscess	E4V5M6	Craniotomy + Evacuation	Recovery
8	31	F	Left Parietal SDH		Left Parieto Temporal Craniotomy	Death
9	62	F	Left FTP SDH	E1VTM2	Left Ftp Decompressive Craniotomy	Recovery
10	81	M	B/L SDH		B/L Burr Hole	Recovery
11	56	M	Sub Acute B/L SDH		B/L Burr Hole	Recovery
12	70	M	Acute On Chronic SDH		Burr Hole	Recovery

DISCUSSION

In these trying times, performing emergency neurosurgical procedures was preferred over definitive surgeries and the outcome was encouraging. One of the patients was diagnosed with a posterior fossa tumor, but in view of COVID positive status, an emergency VP shunting was done, and she recovered well. She is planned for definitive surgery on a later date. Another fighting fit young patient presented with Brain abscess although he had no co morbidities, apart from covid symptoms. He was initially managed with burr hole, but due to inadequate drainage it had to be converted to craniotomy in the same setting and he responded well to the management. 03 patients with Acute on Chronic SDH with COVID symptoms were managed with Burr hole followed by use of Dexamethasone. They responded well and did not require a redo surgery. The role of corticosteroids in prevention of neovascularization probably helped in the desirable outcome. 02 patients with Cauda equina syndrome with COVID symptoms were successfully operated under spinal anesthesia and the risk of anesthesia was therefore substantially reduced.

In view of COVID positive status, due precautions were taken while performing the surgeries which included the usage of PPE (Personal Protective Equipment) and PAPR (Positive Air Pressure Respirator), however there were drawbacks with usage of these equipment. Fogging of goggles and face shields was one of the common problems which was difficult to avoid, despite securing the masks adequately with tapes. Often, they had to be removed to deliver quality surgery and the risk of exposure could not be avoided. Usage of PPE resulted in severe perspiration and adequate hydration prior to the surgery had to be ensured. The usage of table fans would have helped, however it had to be avoided to prevent further aerosol generation. The use of PAPR changed the surgical ergonomics and usage of the neurosurgical chair had become difficult especially in protracted surgeries. Other minor hurdles faced included difficulties while shifting the patient in and out of the

OT. Due to the usage of PPE identifying the OT staff and patients was difficult.

CONCLUSION

The surgical disciplines face substantial challenges during the COVID 19 pandemic and effects on surgical profession will be lasting. Many of the changes that have been instituted during the pandemic are the new reality, and the surgical community must learn to evolve with and accept these changes. Adaptability is the need of the hour, and the future of the profession depends on it. Taking adequate precautions and following a meticulous technique resulted in a positive outcome and delivered encouraging results.

References

1. Lai CC, Shih TP, Ko WC, Tang HJ, Hsueh PR. Severe acute respiratory syndrome coronavirus 2 (SARSCoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents*. 2020;55:105924.
2. Lai CC, Wang CY, Wang YH, Hsueh SC, Ko WC, Hsueh PR. Global epidemiology of coronavirus disease 2019 (COVID-19): disease incidence, daily cumulative index, mortality, and their association with country healthcare resources and economic status. *Int J Antimicrob Agents*. 2020;55:105946.
3. Kandel N, Chungong S, Omaar A, Xing J. Health security capacities in the context of COVID-19 outbreak: an analysis of International Health Regulations annual report data from 182 countries. *Lancet*. 2020;395:1047-1053.
4. Kondziolka D, Couldwell WT, Rutka JT. Introduction. On pandemics: the impact of COVID-19 on the practice of neurosurgery [e-pub ahead of print]. *J Neurosurg*. 2020:1-2. <https://doi.org/10.3171/2020.3.JNS201007>, accessed May 3, 2020.
5. Amin-hanjani S, Bambakidis NC, Ii FGB, *et al*. COVID-19 and neurosurgical practice: an interim report [e-pub ahead of print]. *J Neurosurg* <https://doi.org/10.3171/2020.4.JNS201099>, accessed May 3, 2020.
6. Fontanella M, Saraceno G, Lei T, *et al*. Neurosurgical activity during COVID-19 pandemic: an expert opinion from China, South Korea, Italy, United States of America, Colombia and United Kingdom [e-pub ahead of print]. *J NeurosurgSci* <https://doi.org/10.23736/S0390-5616.20.04994-2>, accessed May 2, 2020.
7. Venkataram T, Goyal N, Dash C, Chandra PP, Chaturvedi J, Raheja A, *et al*. Impact of the COVID-19 Pandemic on Neurosurgical Practice in India: Results of an anonymized national survey. *Neurol. India* 2020;68(3):595. <https://doi.org/10.4103/0028-3886.289004>.

How to cite this article:

Lt Col Anand Gupta *et al* (2022) 'Demographic Profile and Outcome of Neurosurgery in COVID Positive Patients, A Tertiary Care Centre Experience', *International Journal of Current Advanced Research*, 11(04), pp. 624-626.
DOI: <http://dx.doi.org/10.24327/ijcar.2022.626.0139>
