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Research Article

**THE IMPACTS OF THE COVID-19 PANDEMIC ON
NEUROSURGICAL PRACTICE AND TO DECIDE IF
SURGERIES ARE RELATED WITH EXPANDED DREARINESS
AND MORTALITY**

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Abstract:

Aim: Quantitative documentation of the impacts of episodes, including the Covid infection 2019 (COVID- 19) pandemic, is restricted in neurosurgery. Our examination expected to assess the impacts of the COVID-19 pandemic on neurosurgical practice and to decide if surgeries are related with expanded dreariness and mortality.

Methods: A multi-center case-control study was conducted, including patients who underwent neurosurgical intervention in Pakistan for two periods: before COVID-19 and during the COVID-19 pandemic. Our current research was conducted at Jinnah Hospital, Lahore from March 2019 to February 2020. Carefully assessed mediating information included symptomatic class, case need, complexities, length of stay in the medical clinic and mortality at 30 days.

Results: A sum of 890 methodologies were incorporated, 37% during COVID-19. The middle number of methods every day was essentially lower during the COVID-19 period (6.7 cases) than during the pre-COVID-19 period (12 cases; $P < 0.0002$). Difficulties, length of medical clinic remain, and 30-day mortality did not vary during the pandemic. In a multivariate examination looking at the two time frames, case need levels 1 (prompt) (chances proportion [OR], 1.83; 96% confidence stretch [CI], 1.26e2.68), 1 (1e24 h) (OR, 1.64; 96% CI, 1.10e2.42), and 4 (OR, 0.29; 96% CI, 0.18e0.45) indicated huge contrasts. –

Conclusions: At the onset of the COVID-19 pandemic, the overall number of neurosurgical methods decreased, but the number of crisis methods remained the same, causing the need to provide adequate means in the event of a crisis. Especially since the implementation of neurosurgical techniques during the pandemic in areas where the impact of the episode on the medical care setting was limited was safe. Our findings can help create rules for intensive and long-term care during pandemics in careful subspecialties.

Keywords: COVID-19 pandemic, neurosurgical practice, expanded dreariness and mortality.

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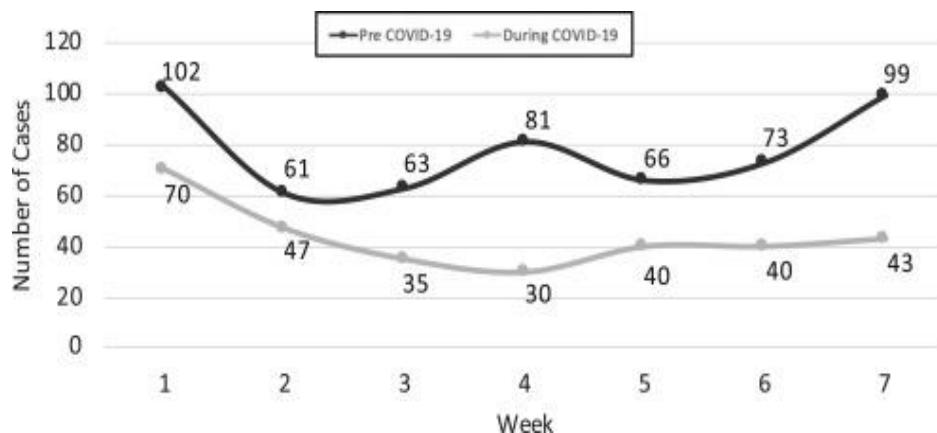
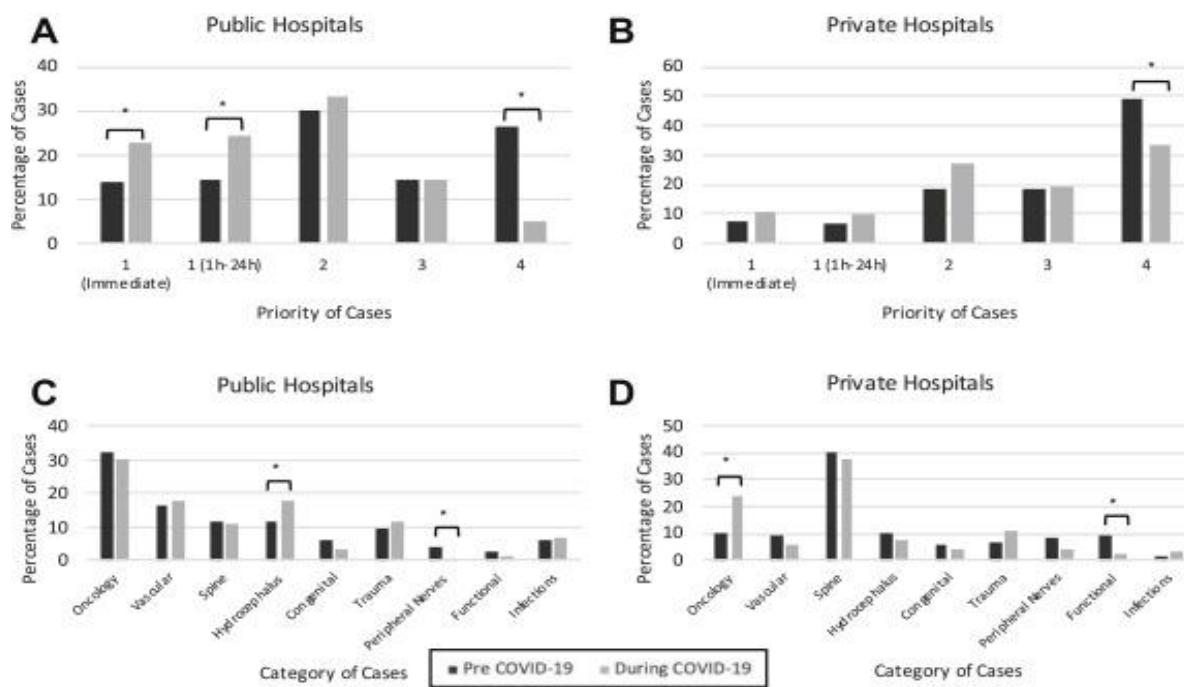
INTRODUCTION:

Since the beginning of the 21st century, the world has experienced a progression of major emergencies due to irresistible outbreaks of infections.¹ These episodes and their consequent impact on the general well-being of the world accelerated the updating of the Global Health Regulations (2005) [1], which produced results in 2007. The meaning of a pandemic has been changed to widespread and sustained transmission of disease in the general population over a wide area across global borders [2]. The World Health Organization announced that Covid-2019 disease would trigger a pandemic on March 11, 2020.⁴ As of May 20, 5,787,209 cases of infection had been reported and the reported loss of life worldwide was 319,786 patients. This viral disease was first discovered in Wuhan, Hubei Region, China, on December 31, 2019. When VIDOC-19 spread beyond China, governments and medical services responded by implementing control measures with varying levels of limitation. The outcomes of a pandemic in neighborhoods can be difficult to monitor, due to rising demands for medical services that may exceed the limits of a welfare system [3]. At the same time, episodes are linked to rising hospitalizations and mortality. Observations of past outbreaks have indicated changes in the use of medical care administrations during the epidemic. Writing describing the progress of prudent administrations during episodes, including COVID-19, is limited to abstract review assessments using surveys and polls [4]. Detailed perceptions of these reviews have shown increased rates of cautious withdrawal and a decrease in the number of elective cases, based on the emotional responses of the specialists under review. In this unparalleled case-control study, we dispassionately examined the impacts of the COVID-19 pandemic on neurosurgical administrations. In addition, we assessed case dispersion, number of neurosurgical strategies, case type and patient safety profiles [5].

METHODOLOGY:

We led an unparalleled multi-center case control focus among practitioners to assess the impacts of the COVID-19 pandemic on their prudent practices. We have included centers from all geographic areas of the Kingdom of Pakistan, including private and public clinics that provide comprehensive neurosurgical administration. The public clinics include welfare services, military medical clinics and university

clinics. Our current research was conducted at Jinnah Hospital, Lahore from March 2019 to February 2020. We followed STROBE (Strengthening the Reporting of Observational Studies in The study of disease transmission) in detailing the rules for revealing the results of this study.²⁵ Data were collected thoughtfully from 29 neurosurgeons. All of the participating neurosurgeons were highly regarded experts in their organizations, who had been practicing for more than three years. After the World Health Organization declared COVID-19 a pandemic, we collected socio-economic patient data and information on careful interventions during four periods: before COVID-19 and during the COVID-19 pandemic (March 11, 2020 to April 30, 2020). We included adult and pediatric neurosurgical methods. Patient segment data included age, gender and type of facility (public or private), and conservative mediation data included identification, classification of conservative mediation, case need, general and craniospinal tangles, length of clinic stay and 30-day mortality. We characterized the case classifications as follows: injury, oncology, spine, vascular, intrinsic, hydrocephalus, marginal nerve, practice and disease. We have characterized the case needs according to the Saudi Relationship of Neurological Surgery's list of needs (Table 1). Four major needs were characterized. Need 1 (rapid) concerns patients requiring rapid intervention. Need 1 concerns cases of distressed patients who need to be treated within 28 long introductory periods. Need 2 concerns patients requiring mediation within several weeks, while need 4 concerns patients requiring intervention within 1 to 4 weeks. Need 4 patients are those whose mediation can be delayed for more than 4 weeks. During the COVID-19 period, we collected information on the status of Coronavirus testing, testing schedule and complications related to COVID-19. We separated patients into 2 groups: before COVID-19 and during Coronavirus. The qualities of segmentation and careful mediation between clusters were contrasted with a two-way t-test if the information was normally disseminated or a Mann-Whitney test if the information was not normally appropriate, and Pearson's c² test was used for cross-tabulation information. Univariate and multivariate relapse calculations were used to anticipate distinctions in neurosurgical intercession factors between pre-Covid-19 and COVID-19 meetings.

Figure 1:**Figure 2:**

RESULTS:

We have broken down 870 methodologies: 548 (67%) in the pre-VIDOC-19 period and 326 (39%) in the VIDOC-19 period. Table 2 presents data on segments and conservative mediation. Mean ages were 37 years (SD, 24.6 years) and 35.8 years (SD, 23 years) in the periods prior to COVID-19; in addition, individual COVID-19 periods. Boys were in the majority in our test, which included 498 boys (58.8%) and 370 girls (43.6%). During the COVID-19 period, 68 patients (24.7%) were tested for coronavirus using nasopharyngeal swabs. Only one patient tested positive and received two retests three days apart that were negative; the patient had no evidence of fever or

upper respiratory tract disease. The mean number of neurosurgical techniques per day was substantially lower in the COVID-19 period (7.7 cases; interquartile range, 3e8) than in the pre-COVID-19 period (12 cases; interquartile range, 6e15; P 0.0002). Public hospitals treated the majority of cases in both periods: 395 (75%) in the pre-COVID-19 period versus 219 (69.5%) in the COVID-19 period (P ¼ 0.28). During the pandemic, 70 methodologies were applied in the primary week, increasing to 40, 40 and 43 each week in weeks 5, 6 and 7 individually (Figure 1). In terms of case class ownership in each period, only the peripheral nerve subspecialty reported essentially fewer cases in the VIDOC-19 period (1.8%) than in

the pre-VIDOC-19 period (7.6%) ($P = 0.02$). We found no critical factual contrast in the other neurosurgical classifications between the groups. In terms of need, the level of need 1 (rapid) was higher in the COVID-19 period (21.5%) than in the pre-Coronavirus period (13.4%; $P = 0.02$). Essentially, the level of need 1 cases

was higher in the COVID-19 period (19.6%) than in the pre-Coronavirus period (13.6%; $P = 0.02$). Nevertheless, the need level of 4 cases was basically lower in the COVID-19 period (13.4%) than in the pre-Covid-19 period (34.7%; $P = 0.0002$).

Table 1:

Variables	Univariate analysis		p Value	Multivariate analysis		p Value
	OR (95% CI)	p Value		OR (95% CI)	p Value	
Gender*	0.944 (0.267 to 3.337)	0.928				
Age, years	1.029 (0.971 to 1.091)	0.326				
Aetiology	2.640 (0.902 to 7.731)	0.077		1.097 (0.696 to 1.731)	0.690	
Edmondson–Steiner grading	2.126 (1.021 to 4.427)	0.044		1.506 (0.412 to 5.509)	0.536	
Macrovascular Invasion	4.911 (1.164 to 20.722)	0.030		2.343 (0.136 to 15.763)	0.558	
Tumour Volume at Baseline	1.557 (0.855 to 2.835)	0.148				
Multifocality at Baseline	4.865 (1.621 to 14.606)	0.005		3.533 (0.445 to 19.021)	0.232	
Platelets ($\times 10^3/\text{mm}^3$)	1.001 (0.984 to 1.019)	0.880				
AFP (ng/mL)	1.002 (0.990 to 1.020)	0.811				
Five-gene risk signature	5.331 (2.522 to 11.268)	0.001		4.253 (2.030 to 8.910)	<0.0001	

*Male gender used as reference.
AFP, α -fetoprotein.

Vila E, et al. Gut 2015;64:1–9. doi:10.1136/gutjnl-2014-308483

Table 2:

Variable	n		mRDt pos (no, %)		Univariate analysis		Multivariate analysis	
	crude	weighted	crude	weighted	OR (95% CI)	P-value	OR (95% CI)	P-value
Age (year)								
1–4.9	48	1879	2(4.1)	79(4.2)	2.13(0.35–13.14)	0.415	2.56(0.64–10.21)	0.183
5–14.9	119	4450	4(3.4)	200(4.5)	1.70(0.37–7.77)	0.491	2.24(0.38–13.15)	0.371
≥ 15	225	7321	5(2.2)	171(2.3)	1.00		1.00	
Sex								
Male	149	5407	3(2.0)	129(2.4)	0.60(0.16–2.31)	0.461	-	-
Female	243	8243	8(3.3)	321(3.9)	1.00			
Has slept under LLIN last night	392	13221						
Yes	286	10264	10(3.5)	400(3.9)	1.00		1.00	
No	106	3386	1(0.94)	50(1.5)	0.31(0.24–2.46)	0.267	0.30(0.04–2.48)	0.262
LLIN/HH ratio	392							
≥ 0.5	98	-	6(6.1)	-	0.28(0.08–0.94)	0.04	0.27(0.08–0.92)	0.036
<0.5	294	-	5(1.7)	-	1.00		1.00	
HH proximity to mosquito breeding site	392	-						
$\geq 1000\text{m}$	380	-	9(2.4)	-	0.12(0.02–0.64)	0.013	0.12(0.02–0.64)	0.014
$<1000\text{m}$	12	-	2(16.7)	-	1.00		1.00	
Insecticide sprayed ≤ 3 months ago	392	-						
Yes	105	-	1(9.5)	-	3.76(0.46–29.7)	0.210	-	-
No	287	-	10(3.5)	-	1.00			

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DISCUSSION:

Our investigation demonstrated a 47% reduction in the amount of neurosurgical strategies applied during the COVID-19 pandemic. The survey of current and past outbreaks demonstrated an adjustment in the use of medical care administrations in clinical confirmations, ambulatory administrations, and crisis visits [6]. In an ongoing study of the effects of the COVID-19 pandemic on 661 neurosurgeons in 93 countries, the overall abrogation rate of clinical visits and elective medical procedures was 58.6% and 52.7% in private

and public practices, individually. Specialists reported that 78% of cases of abrogation were identified with signs of government direction, 16% were identified with a physician bias and 8% were identified with a persistent bias [7]. While not assessed in our report, the decrease in the number of cases observed may be related to the application of strict rules in clinics and careful workforce reorganization to improve the delivery of state-of-the-art medical care during the pandemic. We observed an adjustment in the number of cases each week during the last three weeks of our

survey period (Figure 1). The specific reason for this late adjustment throughout the pandemic in our report could not be linked to any of the factors assessed [8]. In an ongoing survey evaluating conservative volume changes at the beginning and end of the COVID-19 pandemic, 84% of respondents reported more stringent approaches to inpatient medical clinic administration. In addition, small changes were also considered in individual assessment of the danger of delaying medical procedures in situations of explicit neurological disease throughout the pandemic [9]. Analysis of the spread of experienced cases accepting the test classification is important during outbreaks to consider appropriate distribution of goods. In our report, we have impartially collected real case data as well as clinical information to report on the methodology applied during the COVID-19 pandemic. Despite the critical reduction in the quantity of techniques noted in our report, case ownership among neurosurgical subspecialties did not change in a critical way. The two significant decreases in case load were found for peripheral nerves and useful systems. This result can be identified with the elective nature of these two neurosurgical subspecialties, in which most cases are normally assigned on an as-needed basis 4. In all cases, oncology, hydrocephalus and injury cases indicated a slight rise in the rate compared to the pre-VIDOC-19 period, but this change did not reach factual criticality. Most of the rules related to COVID-19 organize oncology cases, clarifying the rise in the rate of oncology methods noted in our review. This conclusion is consistent with those of an ongoing global study that indicates that participating neurosurgeons generally agree that clinically stable but developing oncology cases are at high risk of complexity due to delays caused by the coronavirus pandemic [10].

CONCLUSION:

We quantitatively assessed the influence of the COVID-19 pandemic on a fundamental field, neurosurgery. During the early stages of the coronavirus pandemic, the overall number of neurosurgical methods decreased. The dispersion of techniques remained unchanged among the major jurisdictions of neurosurgical subspecialties. We found minor contrasts in this type of event when we looked at society in general and the private domains. Overall, the set of neurosurgical crisis systems implemented continued to function as before, causing the need to distribute adequate assets to cover crises. Especially since the implementation of neurosurgical techniques during the pandemic in locations where the impact of the outbreak on the medical services system was limited was safe for both patients and team

members who exercised caution. Our findings could contribute to advancing the rules for critical and long-term care during pandemics in careful subspecialties.

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