Effect of COVID-19 Pandemic On Accidental Ingestions In Children: Observational Study

Hussain Sadeq (✉ hsadeq87@icloud.com)

Al-Amiri hospital

Entesar H Husain

Kuwait University

Farah Almutawa

Al-Amiri hospital

Wafa'a Al-Qabandi

Kuwait University

Talal AlSaleem

Jaber Al-Ahmad hospital

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Abstract

Background

Coronavirus disease-19 (COVID-19) was declared by the World Health Organization (WHO) as a global pandemic on March 2020. Several measures have been attempted to contain the spread of the virus including school closures and lockdown. These measures have resulted in children staying at home with potential hazard exposure such as accidental drug or foreign body ingestions. In this study, we want to investigate the impact of COVID-19-related measures on admissions of children with accidental foreign body or drug ingestion.

Methods

All accidental ingestion admissions to pediatric wards at Al-Amiri hospital during the pandemic from March 2020 till February 2021 were retrospectively reviewed. They were compared with admission data from the pre-pandemic period from March 2019 till February 2020.

Results

There were 90 admission with accidental ingestion during the Pandemic compared to 138 admissions in the pre pandemic period. The mean age of admission during non-COVID-19 period was 3.9 ± 2.6 years, and 4.1 ± 2.9 years during pandemic period. The most common cause of accidental ingestion in children in both periods was medication ingestion. Coin ingestion was the second common cause during the pandemic compared to detergent in the pre-pandemic period.

Conclusions

Despite children's stay at home during COVID-19 pandemic, there was a reduction in hospitalization with accidental ingestion. This emphasizes the significance of family availability and constant observation of children at home as an important safety measure.

Background

Coronavirus disease-19 (COVID-19) is a new emerging disease affecting millions of people around the world.¹ This disease is caused by a novel coronavirus called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2).² COVID-19 was declared by the World Health Organization (WHO) as a global pandemic on March 11, 2020.³ During this pandemic, governments have applied many measures to minimize the spread of the virus including school closures and lockdown.^{4, 5}

The first confirmed COVID-19 case in Kuwait was detected on February 24, 2020. Since then, the country was between full lockdown and partial curfew measures.^{5, 6} In addition, schools and day cares were closed forcing children to stay at home.^{5, 6, 7} These two measures had resulted in lifestyle change of families and children leading to an increased burden of families managing their children at home with

potential hazard exposure.^{7,8} In India, the national lockdown had led to increase in cases of foreign body lodgments in ears, nose, or throat among children.⁹ In Italy, a dramatic increase in batteries ingestions in children during the lockdown was observed.⁷ We aim in this study to evaluate the impact of COVID-19-related measures on the number of cases of accidental foreign body or drug ingestion among children compared to the preceding year.

Methods

This is a retrospective chart review of all accidental ingestion admissions to pediatric wards at Al-Amiri hospital during the pandemic from March 2020 till February 2021. This was compared with data from the pre-pandemic admissions from March 2019 till February 2020. Data were collected from patients' medical charts after being retrieved from the medical record department. The collected data included age, sex, month of admission, type of ingested material, and outcome. The subjects were all children aged 12 years or less admitted with confirmed or suspected accidental foreign body or drug ingestion. All children with food impaction or aspiration were excluded from the study. We analyzed the data and computed descriptive analysis of all variables using Statistical Package for Social Sciences (SPSS) version 27 (International Business Machines (IBM) Corporation, Chicago, IL, U.S.).

Results

There were 138 cases of accidental ingestions admitted during non-COVID-19 period (March 2019 to February 2020) representing 4.5% of all admissions. There were 90 cases admitted in the COVID-19 pandemic period (March 2020 to February 2021) representing 5.7% of all admissions. Figure 1 compares the number of cases of accidental ingestions admitted per month during the two periods of the study. The mean age of admission during non-COVID-19 period was 3.9 ± 2.6 years, and 4.1 ± 2.9 years during pandemic period. Toddlers were the highest group in both periods (41% in the non-COVID-19 and 44% in the COVID-19 period). Males were more dominant in both periods; 80 (58%) during non-COVID-19 period, and 48 (53.3%) during COVID-19 pandemic.

Solid objects ingestion was found in 76 cases (55%) in the non-COVID-19 period, and in 53 cases (59%) in the COVID-19 period. Endoscopic or bronchoscopic removal of the ingested solid was needed in 25 patients (33%) in the non-COVID period and in 16 cases (30%) during COVID time. The most common cause of accidental ingestion in children in both periods was medication. Coin ingestion was more documented during the pandemic in 16 cases (18%) compared to 15 cases (11%). Patients' characteristics and details of the ingested items are listed in Table 1. The means and proportions of the two periods of the study were compared for significance and none was significantly associated.

Table 1
Patients' characteristics and nature of ingested materials

Characteristics	Mar. 2019 – Feb. 2020	Mar. 2020 – Feb. 2021
Total cases of FB ingestions	138 cases	90 cases
Age in years range (mean $\pm$ SD)	0.6–11.6 (3.9 $\pm$ 2.6)	0.9–11.9 (4.1 $\pm$ 2.9)
Age groups (N, %)	10 (7.2%)	4 (4.5%)
Infants (< 1 year)	57 (41.4%)	40 (44.5%)
Toddlers (1–3 years)	35 (25.4%)	25 (27.7%)
Pre-school age (3–5 years)	36 (26%)	21(23.3%)
School age (5–12 years)		
Gender (N, %)	80 (58%)	48 (53.3%)
Male	58 (42%)	42 (46.7%)
Female		
Nationality (N, %)	94 (68.1%)	62 (68.9%)
Kuwaiti	44 (31.9%)	28 (31.1%)
Non-Kuwaiti		
Liquid FB or drug ingestion (N, %)	62 (44.9%)	37 (41.1%)
Solid FB ingestion (N, %)	76 (55.1%)	53 (58.9%)
Removed by procedure	25 (32.9%)	16 (30.1%)
Passed by itself	51 (67.1%)	37 (69.9%)

FB = foreign body

* = 2 marble glass balls, 1 glass piece, 1 sticker, and 1 wooden toothpick

Characteristics	Mar. 2019 – Feb. 2020	Mar. 2020 – Feb. 2021
Type of foreign body (N, %)	17 (12.3%)	10 (11.1%)
Button battery	15 (10.9)	16 (17.8%)
Coin	18 (13%)	5 (5.6%)
Detergent	41 (29.7%)	26 (28.9)
Drug	1 (0.7%)	4 (4.4%)
Kerosene	5 (3.6%)	5 (5.6%)
Magnet	23 (16.7%)	11 (12.2)
Metal object	5 (3.6%)	0 (0%)
Other*	2 (1.4%)	2 (2.2%)
Pesticide	11 (8%)	11 (12.2%)
Plastic object		
FB = foreign body		
* = 2 marble glass balls, 1 glass piece, 1 sticker, and 1 wooden toothpick		

Discussion

During COVID-19 pandemic, school closure, lockdown and parents' reluctance to visit the hospitals have reduced hospitalizations and pediatric emergency visits.^{10, 11} In our study, there was a reduction of cases of accidental ingestion during the pandemic compared to the pre-pandemic admissions. Lelak and her colleagues have reported a similar finding of reduction in accidental ingestions by 6.3% in United States from March to December 2020 compared to the pre-pandemic period.¹²

While medications ingestion was the most common cause of accidental ingestion in children in both periods in our study, there have been reports about other causes of ingestion during the pandemic. Antonio Pizzol and his colleagues have found a dramatic increase in batteries ingestions in children, a potentially fatal event, during the COVID-19 pandemic lockdown.⁷ Hand sanitizers have become the newly recognized ingested material during the pandemic.¹³ Patider et al. have reported a 5-year-old child presenting with ataxia after ingestion of ethyl alcohol-based sanitizer.¹⁴

Conclusions

In conclusion, during COVID pandemic there was a decline in the number of cases admitted with accidental ingestion among children compared to the pre-pandemic period. This was a result of the lockdown and constant observation of families to their children at home. While medications were the main

reason of accidental ingestion, it is important to note that globally during the pandemic, new causes for ingestion have emerged like batteries and sanitizer solutions. This mandates the need to re-advocate child safety at home among families while staying at home with their children.

Declarations

Ethics approval and consent to participate

This study was reviewed and ethically approved by the Review Board of the Ministry of Health of Kuwait. All methods of data collection were performed in accordance with the ethical standards of the institutional and/or national research and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

HS: study conception and design. HS and FA: data collection. HS, EH, WA, and TA: analysis and interpretation of results. HS and EH: draft manuscript preparation.

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Figures

Figure 1

Cases of accidental ingestions