

# Foreign body ingestions in children during COVID-19 lockdown; was it harmful for children?

COVID-19 SOKAĞA ÇIKMA KISITLAMASI SÜRESİNCE ÇOCUKLARDA YABANCI CİSİM ASPİRASYONLARI; YASAKLAR ÇOCUKLARA ZARARLI MI?

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## ABSTRACT

Although a year has passed since the epidemic started, all the world is still affected by COVID-19 infection. Not only COVID-19 infection but pandemic has led many global healthcare problems. We noticed high number of admissions to pediatric emergency department (PED) with gastrointestinal foreign body ingestions (FBIs). The aim of this study was to evaluate the effect of restrictions on FBIs.

**Materials and Methods:** A retrospective review of patients aged under 18 years who admitted with FBI to our PED was performed. Two national lockdown periods April 3-June 1, 2020 and November 18, 2020- January 18, 2021 were evaluated. Demographic characteristics, number and type of FBIs and endoscopic procedures were recorded. Data from the same periods of the previous year was collected and compared.

**Results:** A total of 168 cases (94 in lockdown periods) were evaluated. The number of FBIs was not significantly higher in 2020 but the ratio of FBIs to PED visits was significantly higher in lockdown periods ( $p=0.001$ ). The number of endoscopic procedure and type of FBIs were similar ( $p=0.151$ ,  $p=0.965$ ). The number of FBIs and time to hospital admission increased in second pandemic period ( $p=0.018$ ,  $p=0.006$ ).

**Conclusion:** This study highlights a remarkable higher rate of FBIs related admissions in a PED during pandemic period but the numbers of total or high-risk FBIs was not significantly higher.

**Keywords:** Children, COVID-19, Foreign body ingestion, Pandemics

## ÖZ

**Amaç:** Salgının başlamasından bu yana bir yılı geçmesine rağmen, tüm dünya hala COVID-19 enfeksiyonundan direkt veya dolaylı olarak etkilenmekte. Sadece COVID-19 enfeksiyonu değil, pandemi de birçok küresel sağlık sorunu yarattı.

## Sevim ÇAKAR

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Gastrointestinal yol yabancı cisim aspirasyonları (YCA) ile çok sayıda çocuk pediatrik acil servise (PAS) başvurdu. Bu çalışmanın amacı, kısıtlamaların YCA'ları üzerindeki etkilerini değerlendirmektir.

**Gereç ve Yöntem:** YCA ile PAS'a kayıtlı 18 yaşın altındaki hastaların verilerinin retrospektif incelemesi yapıldı. 3 Nisan-1 Haziran 2020 ve 18 Kasım 2020-18 Ocak 2021 tarihleri arasındaki iki ulusal sokağa çıkma kısıtlaması dönemi değerlendirildi. Demografik özellikler, YCA'larının sayısı ve türü ile endoskopik işlemler kaydedildi. Bir önceki yılın aynı dönemlerine ait veriler (kısıtlama olmayan) de toplandı ve karşılaştırıldı.

**Bulgular:** Toplam 168 hasta (94 kısıtlama süresinde) değerlendirildi. YCA'larının PAS'a başvuru sayısı 2020'de kısıtlama dönemi ile karşılaştırıldı fakat istatistiksel olarak yüksek saptanmadı ama kısıtlama dönemleri de YCA'larının PAS'a başvuran çocuk sayısına oranı önemli ölçüde yüksekti ( $p=0,001$ ). Endoskopik işlem sayısı ile aspire edilen cisimlerin çeşidi istatistiksel olarak dönemler arası benzerdi ( $p=0,151$ ,  $p=0,965$ ). İkinci sokağa çıkma kısıtlaması döneminde YCA'larının başvuru sayısı ve hastaneye başvuru süresi arttı ( $p=0,018$ ,  $p=0,006$ ).

**Sonuç:** Bu çalışma, pandemideki sokağa çıkma kısıtlamaları sırasında PAS'a gastrointestinal YCA sebebi ile başvuran hastaların toplamda başvuran hastalara göre oranlarının oldukça yüksek olduğunu gösteriyor, ancak YCA ile başvuran çocukların sayıları veya yüksek riskli YCA'ların sayısı kısıtlama dönemlerinde istatistiksel olarak anlamlı yüksek değildi.

**Anahtar kelimeler:** Çocuk, COVID-19, Yabancı cisim aspirasyonu, Pandemi

After COVID-19 lockdown, there have been radical changes especially in hospital admissions all over the world (1-4). Despite of dramatically reduced pediatric emergency department (PED) visits, the high number and different type of home accidents especially foreign-body ingestion (FBI) cases was investigated after the changes in lifestyle (4-6). During lockdown, the number of patients presented at the PED fell and easier access to the hospital was possible. The asocial children who cannot go to the school, increased playing games with objects that are easily found at home like batteries, corrosive materials and sharp objects and of course, their aspiration risk increased. Our aim is to assess the number, types and features of FBIs in lockdowns and compare it with the same periods of the previous year. The FBIs awareness of the public and clinicians is crucial for prevention, rapid diagnosis and treatment.

## METHODS

A retrospective chart review of all patients aged under 18 years who admitted with FBIs to PED of our

tertiary hospital was done after the approval of local ethics committee. Two national lockdown periods April 3-June 1, 2020, and November 18, 2020- January 18 2021 and corresponding periods in 2019 were evaluated. We excluded patients with missing data, caustic ingestions, trichobezoars, food bolus impactions, fish bones, history of foreign body but no foreign body identified. Demographic characteristics, type of FBI, time to referral, endoscopic procedure requirement and its findings were obtained from electronic medical records. FBIs were classified into 6 main categories: sharp objects, batteries, multiple magnets, coins, toys, others.

Statistical analyses were performed using the SPSS software version 22.0 (IBM Corp., Armonk, NY). The data were presented as proportions for categorical variables or medians with interquartile range (IQR) for quantitative variables. For the comparison of groups, the categorical variables were analyzed with a Chi-square test or Fisher exact test as appropriate. Kruskal- Wallis test was used to

compare quantitative data of groups according to time periods. When the significance was observed, pairwise comparisons were performed using Mann Whitney- U test with Bonferroni correction. The statistically significant p value was considered under 0.05.

## RESULTS

A total of 168 cases of FBIs with 94 in lockdown periods were evaluated. The overall mean age was 48.5 months (min 5 months, max 210 months, SD 43.1) and 46.8% of study population was female. The number and type of FBIs in four different periods was presented in Figure 1.

**Figure 1.**

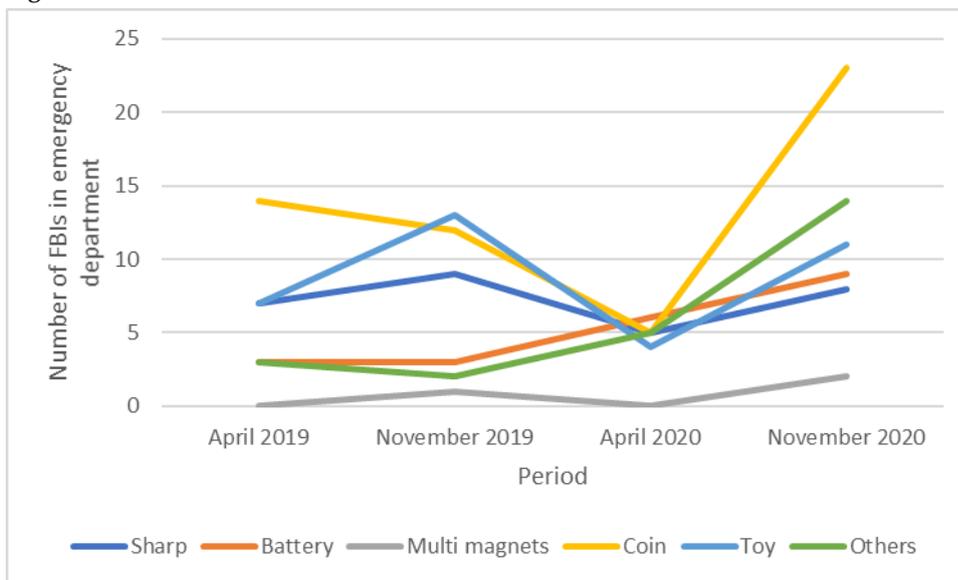


Figure 1. Number of FBIs in children in four different periods; Control 1: 3 April-1 June in 2019, Lockdown 1: the same period in 2020, Control 2:18 November 2019- 18 January 2020 and Lockdown 2:18 November 2020- 18 January 2021. FBIs = foreign-body ingestions.

The demographic and clinical characteristics of patients according to time periods were shown in Table 1.

**Table 1.** Characteristic Features of Patients with FBIs

Characteristics	Lockdown 1 (n=25)	Lockdown 2 (n=69)	Control 1 (n=34)	Control 2 (n=40)	<i>p</i> <i>value</i>
Age, median (months)	23	39	40	32	0.189 <sup>a</sup> 0.487 <sup>b</sup> 0.069 <sup>c</sup>
Sex (F/M)	13/12	31/38	14/20	19/21	0.862 <sup>a</sup> 0.775 <sup>b</sup> 0.544 <sup>c</sup>
ED visit number	5338	8562	19405	23666	0.001 <sup>a</sup>
FBIs/ED visit	47/10000	86/10000	18/10000	17/10000	<0.001 <sup>b</sup> 0.018 <sup>c</sup>
Time to hospital admission, median(hour)	1	4	3	3	0.048 <sup>a</sup> 0.409 <sup>b</sup> 0.006 <sup>c</sup>
Discharges/hospitalizations(n)	20/5	56/11	32/2	35/5	0.158 <sup>a</sup> 0.151 <sup>b</sup> 0.759 <sup>c</sup>
Endoscopic procedure (n, %)	1 (4%)	5 (7%)	1 (3%)	5 (12.5%)	0.151 <sup>a</sup> 0.666 <sup>b</sup> NS <sup>c</sup>
<b>Type of FBI (n, %)</b>					
Sharp	5(20%)	8(11.6%)	7(20.9%)	9(22.5%)	0.965 <sup>a</sup> 0.066 <sup>b</sup> 0.455 <sup>c</sup>
Battery	6 (24%)	9 (13%)	3 (8.8%)	3 (7.5%)	
Multipl magnets	0	2 (2.9%)	0	1 (2.5%)	
Coin	5 (20%)	23 (33.3%)	14 (41.2%)	12 (30%)	
Toy	4 (16%)	11 (15.9%)	7 (20.6%)	13 (32.5%)	
Others	5 (20%)	16 (23.2%)	3 (8.8%)	2 (5%)	

**FBI:** Foreign body ingestion, **ED:** Emergency Department, **Lockdown 1:** From 3 April to 1 June of 2020, **Lockdown 2:** From 18 November, 2020 to 18 January, 2021, **Control 1:** From 3 April to 1 June of 2019, **Control 2:** From 18 November, 2019 to 18 January, 2020.

<sup>a</sup> Comparison of four periods <sup>b</sup> Comparison of Lockdown periods and Control periods <sup>c</sup> Comparison of Lockdown 1 and Lockdown 2.

In the first lockdown period, FBIs number was distinctly lower than the second lockdown period (n=25 vs n=69). During lockdowns only six endoscopic procedures was done and there was no complication related to endoscopic procedure. One patient was admitted two weeks after the ingestion of safety pin which was stucked into the pylorus and there was not any complication after endoscopic removal. The mild pathological endoscopic

findings like gastric erosions were observed in four patients (66.7%). In one patient, endoscopic evaluation was completely normal.

## DISCUSSION

Since the COVID-19 pandemics started all around the world, spending more time at home, related to significant reduction in pediatric admissions but increased number of home accidents (2-5). While the routine

procedures canceled or postponed, relatively high number of FBI cases admitted hospitals. This situation must be accepted as one of the indirect effects of COVID-19 pandemic during restrictions.

Bressan et al. showed that the number and severity of PED presentations related to domestic accidents significantly increased during the lockdown period in Italy (2). Contrary to our results, one single center study from United Kingdom showed increase in the numbers of FBIs and ingestions of button battery and magnets foreign body in pandemic group (4). Pizzol A et al. reported a decrease in the number of coin ingestions and contrarily significant increase in the number of battery ingestions during pandemic period (5). These data was explained with a change in childhood habits like an increased use of electronic devices and requirement for battery supplies. Major change in shopping habits such as rapid change in digital payment trends can be connected to relative decrease in coin ingestions in this study. In our study, type of FBIs did not vary in any period. In our developing country this different result can be explained by the fact that we have still limited access to digital technologies and payment.

Although the elective procedures were not done during lockdowns to increase the protective measures, the study showed that the upper gastrointestinal endoscopy requirement did not statistically decrease in these periods opposite to the study of Bucci et al. (6). In this Italian study high-risk ingestions of caustic substances, batteries and sharp objects were more common in 2020, whereas toxic substances, blunt foreign bodies and other causes dominated in 2019, but there was not any change in the type of objects in our study. Having large families in our country and culture with many caregivers at home, may explain this different result.

We found an increase in the number of FBIs and in the time to hospital admission in second pandemic with the prolongation of the lockdown process and it can be related with increase in the stress level and the decrease in patience of families and children. Economical troubles, changing habits in parents like working from home, while also caring for their children and stress can increase risk of child

maltreatment (7). The global COVID-19 pandemic is a big stressor and compromised parenting often place children at risk of abuse and neglect. But increasing number in FBIs shows us that caregivers did not delayed seeking medical help because they are scared of possible harmful effects of FBIs and were statistically faster in visiting the hospital in the first lockdown period. This situation can be explained by the fact that the number of applications in hospitals were fewer in the pandemic period and families could access health services quickly.

This data is opposite of reports from the other countries which are showing increase in the numbers of FBIs in children during the pandemic.

### Study limitations

Our study results are limited because of the single-center design and the low case numbers. That small variations in numbers of every period can affect our results.

### CONCLUSION

Our study highlights a remarkable higher rate in FBIs admissions to pediatric emergency department during pandemic period but the numbers or types of FBIs during the lockdown was not significantly higher. Maybe there is the benefit of the restrictions in order to provide easier access to the hospital for emergent situations in the pandemic period. This information, which is different from the literature, should be supported by other multicenter studies especially from our country. The fact that our country has different dynamics from European countries can also explain these differences. The FBIs awareness of the public and clinicians is crucial for prevention, rapid diagnosis and treatment.

### Acknowledgements

Ethical approval: Ethical approval for this study was obtained from Behçet Uz Children's Hospital Ethics Committee (Date: 28.01.2021, Number:502).

### Informed Consent

Informed consent was not obtained from the patients given the retrospective study design.

### Conflict of Interest

The authors certify that there is no conflict of interest with any financial organization regarding the material discussed in the manuscript.

### Financial Disclosure

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