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Characteristics of Patient with Foreign Body Ingestion in Palembang

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ABSTRACT

Background. Foreign body ingestion is a common diagnosis that presents in emergency departments—coins as the oesophagal foreign body most commonly found in infants and children. Coins retained in the oesophagus require intervention to prevent complications. This study aimed to determine oesophagal coin foreign body patient's characteristic at Mohammad Hoesin General Hospital Palembang. **Method.** This study design was retrospective descriptive. Samples were all patient diagnosed with oesophagal coin foreign bodies which underwent Extraction with esophagoscopy guidance that was performed at Mohammad Hoesin General Hospital Palembang during January 2013 – August 2017. **Result.** Forty-three patients had diagnosed with oesophageal coin foreign bodies consist of 22 males and 21 females. The most frequent age was 4fouryears old. The most presenting symptoms are Globus sensation on the throat (79%) and odynophagia (51,1%). Radiologist confirmation was done in every patient with foreign coin bodies in oesophagus. All patients underwent oesophagoscopy. 65,1% of cases of foreign coin bodies were found in the second constriction of throat. Duration of stay in hospital was the range from 1- 4 days, with the most frequent, was two days. There was no complication found in all patients. **Conclusion.** Oesophagal coin foreign body is most commonly ingested in children. The most presenting symptom is globus sensation on the throat. There is no complication found in this study.

1. Introduction

Foreign body in the oesophagus is an emergency case that is often found in the ENT. Foreign objects in the throat are all objects, whether in the form of food boluses or other hard object agents that are swallowed intentionally or not that can cause obstruction and injury to the oesophagus. Cases of oesophagal foreign bodies can occur at any age, from infants and children to parents. Children tend to enter more often and swallow foreign matter or any food that is put in the mouth. In adults, foreign body events in the oesophagus usually occur in those with psychiatric disorders, mental retardation, alcohol poisoning, and health problems or old age. At the same time, the most common causes of ingested foreign objects are found in children with peak events between the ages of 6 months to 3 years. The types of foreign matter eaten in children and adults tend to be different. In adults, the kind of object that is mostly swallowed comes from food, usually in the form of pieces of meat, bones and dentures. At the same time, the children are generally in warm small objects, such as coins, batteries, or another thing. Cases of foreign metals in the oesophagus are the most common cause of foreign objects in the United States and Europe. Oesophagal foreign bodies, either sharp or blunt can easily pass through the distal digestive tract when it reaches the stomach, except for larger foreign bodies which are somewhat difficult to move, so endoscopy is needed to remove them. The swallowed oesophagal foreign body usually stops in parts of the organ that are anatomically and physiologically constricted, such as the cricopharynx, a crossing site between the aorta and the left main bronchus, and the lower oesophagal sphincter. About 80% of foreign matter can pass

through the digestive tract without problems, 19% of cases require an oesophagoscopy procedure, and about 1% of patients require an *external approach* namely esophagotomy.[2,3]

Delay in diagnosis can lead to severe and life-threatening illnesses. In the United States, according to a report from Palta et al. In 2014 ingestion of foreign bodies resulted in 1500 deaths each year and patients usually present with clinical manifestations of ingestion of foreign bodies in the form of epigastric pain (55%), vomiting (16%), dysphagia (7%), the lump in the throat (7%), pain chest (3%), and asymptomatic (30%). The purpose of management, in this case, is not only to eliminate obstruction and symptom but also to prevent complications due to foreign objects themselves. Some oesophagal foreign bodies do not have to be done immediately; oesophagoscopy can be done 24 hours to 48 hours after the patient is swallowed. However, oesophagoscopy should be done directly if the foreign object took a battery or sharp object that is suspected of causing oesophagal perforation.[3-7]

This case report is a retrospective descriptive study of foreign bodies of oesophagal coins in the Department of Otolaryngology-Head and Neck Surgery General Hospital Dr Mohammad Hoesin (RSMH) Palembang from January 2013 to December 2017. Patient data obtained from medical record data. This study describes the patient demographic data, which includes the number, age, and gender of the patient. Also, this study describes the type of foreign body, time ingested until the patient goes to the hospital, complaints of the patient during treatment, activities during the incident, radiological examination results, as well as the location of foreign coins in the operative oesophagus. The purpose of this study was to determine the characteristics of foreign bodies of oesophagal coins in the Department of Otolaryngology-Head and Neck Surgery RSMH Palembang, and it was hoped that the results of the study could be the primary data for subsequent analyses.

2. Methods

This research is a retrospective, descriptive study. The data came from the medical records of patients who were swallowed by foreign bodies of oesophagal coins in the KSM ENT-KL Dr Mohammad Hoesin Palembang. This study describes the patient demographic data, which includes the number, age and gender of the patient. This study also describes patients' complaints during treatment, activity at the time of the event, the results of radiological examinations and the location of foreign objects in the oesophagal coin. The purpose of this study was to determine the characteristics of foreign bodies of oesophagal coins in the KSM ENT-KL Dr Mohammad Hoesin Palembang. The results of the survey are presented descriptively in narrative and table form. The research was conducted at the KSM ENT-KL, Dr Mohammad Hoesin Palembang. The time of the study was held in January 2013 to December 2017. The population and sample in this study were all patients diagnosed with oesophagal foreign body coins and extraction measures with the guidance of oesophagoscopy in the period of January 2013 to December 2017.

3. Results

From the medical record data of patients seeking treatment at RSMH from January 2013 to December 2017, 43 patients were diagnosed with a foreign coin in the oesophagus and Extraction was carried out with the guidance of oesophagoscopy. Based on the sex of 43 patients, there were 22 male patients and 21 female patients. The percentage of male patients was 51.2%, and the rate of female patients was 48.8%. The gender distribution of patients can be seen in **Table 2.**

Patients who come for treatment has aged two months to 11 years. The age of most patients who swallowed foreign coins is four years as many as ten patients (23.2%)—followed by 5 and 3 years respectively eight people (18.6%) and seven people (16.3%). The lowest number is two months, 1 nine years, ten years, ten years and 11 years, each of which is one person (2.7%). Age distribution of foreign body coins oesophagus by age can be seen in **Table 3.**

Based on the year of the arrival of 43 patients consisting of 3 patients in 2013, 5 patients in 2014, 12 patients in 2015, 12 patients during 2016 and 11 patients in 2017, with the annual percentage of patients of 7 %, 11.6%, 27.9%, 27.9%, and 25.6% respectively. The highest number of visits was obtained

in 2015 & 2016. The distribution of cases of foreign coins in the oesophagus per year can be seen in **Table 4**.

Based on the residence, as many as 19 patients (44.2%) came from the city of Palembang and patients from outside the city of Palembang were 21 patients (55.8%). The ratio of patient addresses within and outside the city is 0.8: 1. Patient dwellings from out of town come from towns or districts in southern Sumatra such as Lahat, Muara Enim, Ogan Komering Ilir, Inderalaya and Musi Banyuasin. The distribution of patients with oesophagal coins by address can be seen in **Table 5**.

Based on the activities carried out when the patient swallows a foreign object, all patients who are taken by a foreign object are playing, no other events are encountered just before eating a foreign object. The distribution of activities carried out when ingested by foreign objects can be seen in **Table 6**

From the history obtained, the most common complaints were 79.0% lumps, 51.1% odynophagia, 48.8% dysphagia, 16.3% sub-sternal pain and 6.9% choking feelings from the research data found no patients who experience shortness of breath. The distribution of patient complaints can be seen in **Table 7.**

Based on the length of time patients come to the hospital to get treatment, more patients come to the hospital in less than 24 hours by 25 people with a percentage of 58.2%, and 12 of these patients arrived within 24-72 hours, with a rate of 27.9%, and 6 of these patients were present for more than 72 hours, with a percentage.9%. The distribution of patient time intervals to hospitals can be seen in **Table 8.**

Based on the distance of ingestion of foreign objects to X-ray examination, patients who underwent X-ray examination with an interval of under 8 hours as many as 16 people with a percentage of 37.2%, and most of the patients were X-rayed after 8 hours as many as 27 people with a portion of 62.8%. The distribution of the time the patient was taken a plain photo examination can be seen in **Table 9.**

Intra-operatively, it is found that the foreign body of the coin is in the first narrowing to the fourth narrowing of the oesophagus. The location of the foreign body from the first incisor varies, according to the patient's age. The location of the shortest coin foreign object from incisor 1 is 9 cm (narrowing I) in patients aged four years. At the same time, the farthest foreign coin is obtained as far as 23 cm from incisor 1 (narrowing II) in patients aged three years. The description of foreign coinage based on the distance from the incisors on intraoperative findings can be seen in **Table 10.**

Based on intraoperative findings, the location of the foreign body is in constriction 1, namely in the cricopharyngeal area in 10 cases with a percentage of 23.3% where the distance of the foreign body from incisor 1 is 9 to 13 cm depending on the age of the patient. The location of the next foreign body is in the second narrowing of 28 cases with a percentage of 65.1% when the oesophagus crosses the aortic arch which is as high as thoracic 1 to thoracic 4, where the distance of a foreign body from incisor 1 is 12 cm in children and 22 to 24 cm in adults. Whereas in the third narrowing found 3 cases (7.0%), namely narrowing due to suppression of the left bronchi. Foreign objects which are in the fourth narrowing are diaphragmatic hiatus in 2 patients (4.6%). The average location of a foreign body is found 17 cm from the first incisor. The distribution of foreign objects can be seen in **Table 11.**

Based on the time the patient was treated at the hospital, as many as 5 patients underwent treatment in the hospital for 1 day, 27 patients underwent surgery for two days, nine patients underwent treatment for three days, and 2 of them underwent treatment for 4 days. The highest percentage of patients were patients who underwent treatment for 2 days, totalling 27 people (62.8%). While the smallest portion of patients is patients who undergo surgery for 4 days, amounting to 2 people (4.7%). The distribution of oesophagal foreign body patients based on the time of hospitalization can be seen in **Table 12.**

Table 2. Characteristics of patients with oesophagal foreign body coins by gender

Years	Male	Female	Total
2013	1	2	3
2014	2	3	5
2015	7	5	12
2016	7	5	12
2017	5	6	11
Total	22 (51.2%)	21 (48.8%)	43 (100%)

Table 3. Characteristics of patients with oesophagal foreign body coins by age group

Age (years)	Total	Percentage (%)
Two month	1	2.3
1	1	2.3
2	5	11.6
3	7	16.3
4	10	23.2
5	8	18.6
6	3	7.0
7	3	7.0
8	2	4.8
9	1	2.3
10	1	2.3
11	1	2.3
Total	43	100

Table 4. Patient characteristics of oesophagal foreign body coins by year

Years	Total	Percentage (%)
2013	3	7.0
2014	5	11.6
2015	12	27.9
2016	12	27.9
2017	11	25.6
Total	43	100

Table 5. Characteristics of patients with oesophagal foreign body coins by address

Years	In The City	Out of Town
2013	3	0
2014	4	1
2015	6	6
2016	1	11
2017	5	6
Total	19	24

Table 6. Sufferers of oesophagal foreign bodies based on activity when swallowed

Activities	Total	Percentage (%)
Playing	43	100
Total	43	100

Table 7. Complaints of patients with foreign bodies of oesophagal coins

Complaint	Incident	Percentage (%)
Dysphagia	21	48.8
Odynophagia	22	51.1
Lumps	34	79.0
Choking feeling	3	6.9
Sub-sternal pain	7	16.3
Out of breath	0	0

Table 8. Patient time to hospital

Interval	Total	Percentage (%)
<24 hour	25	58.2
24-72 hour	12	27.9
>72 hour	6	13.9
Total	43	100

Table 9. Interval of patient's x-ray examination

Interval	Total	Percentage (%)
< 8 hours	16	37.2
> 8 hours	27	62.8
Total	43	100

Table 10. Locations of foreign bodies based on intraoperative findings

No	The intraoperative situation, from incisor 1	Patient's age	Narrowing Oesophagus
1	12 cm	Three years	I
2	10 cm	Five years	I
3	12 cm	Five years	I
4	12 cm	Nine years	I
5	12 cm	Seven years	I
6	13 cm	Eight years	I
7	10 cm	Six years	I
8	9 cm	Four years	I
9	10 cm	Six years	I
10	9 cm	Four years	I
11	16 cm	11 years	II
12	16 cm	Seven years	II

13	17 cm	Five years	II
14	15 cm	2 years	II
15	16 cm	4 years	II
16	18 cm	3 years	II
17	14 cm	5 years	II
18	17 cm	5 years	II
19	18 cm	4 years	II
20	17 cm	4 years	II
21	15 cm	Six years	II
22	17 cm	Four years	II
23	16 cm	Ten years	II
24	15 cm	Eight years	II
25	16 cm	Two years	II
26	16 cm	2 years	II
27	14 cm	3 years	II
28	12 cm	2 month	II
29	14 cm	4 years	II
30	14 cm	4 years	II
31	14 cm	5 years	II
32	14 cm	5 years	II
33	14 cm	3 years	II
34	17 cm	5 years	II
35	17 cm	6 years	II
36	18 cm	4 years	II
37	12 cm	2 years	II
38	16 cm	7 years	II
39	14 cm	3 years	II
40	14 cm	3 years	II
41	20 cm	4 years	III
42	20 cm	3 years	III
43	20 cm	4 years	III
44	19 cm	2 years	IV
45	23 cm	3 years	IV

Table 11. Location of foreign bodies based on oesophagal constriction

Location of foreign objects	Total	Percentage (%)
Narrowing 1	10	23.3
Narrowing 2	28	65.1
Narrowing 3	3	7.0
Narrowing 4	2	4.6
Total	43	100

Table 12. Characteristics of oesophagal foreign body patients based on hospital stay

Care (days)	Total	Percentage (%)
1	5	11.6
2	27	62.8
3	9	20.9
4	2	4.7
Total	43	100

4. Discussions

Foreign objects in the oesophagus are the cases most often encountered with foreign objects most frequently encountered are coins, other types of foreign objects can be batteries, magnets, or other toys. Several studies conducted by Ekim H & Kay M shows that coins are the most cause case of foreign objects, especially in children. Although most foreign objects can pass through the digestive tract spontaneously and do not require specific treatment evidence international foreign bodies retained in the oesophagus are significantly related to morbidity and mortality in the United States with an estimated 1,500 deaths annually.[3.4.8.9]

The results of research conducted at the RSMH from January 2013 to December 2017 showed that the incidence of foreign body coins in the oesophagus was more common in male patients with the highest number of cases at the age of 4 years, ten 0 patients (23.2%). Of the 43 cases, 24 cases (55.7%) of them occurred in patients under five years old—patients who come for treatment with an age range of 2 months to 11 years. The age of most patients who swallow foreign coins is more often found in children due to the oral phase in children who tend to put objects around them in the mouth repeatedly.[3.5]

Research conducted by Sahet al. al (2014) shows that 93% of foreign body cases in the oesophagus are coins with an average age of patients of 3.9 years, and 55% of patients are male. The same thing was reported by Russel et al. in a study from 1999-2012 in the pediatric surgery division in Alabama with an average age of 3.5 years, and 55% of patients were men with the most frequent case of foreign objects being coins. Hussainet al.l conducted a study at the Saidu Swat Hospital in Pakistan from January 2006 to June 2009 to find the incidence of foreign objects in men as much as 63% and 38% of women. Hussain explained that most age is age under ten years as much as 60.26%. At RSUD dr. Soetomo in the period 2000 to 2012 reported that 669 patients performed oesophagoscopy and foreign body extraction. The most common age is 0 to 5 years as many as 30.34%, aged 5 to 10 years as much as 19.88% and aged 40 to 60 years as much as 22.87%. Comparison of male and female patients of 3:2. Research conducted by Marassabesi in the period 2010 to 2014 in Prof. Dr R. D. Kandaou Manado received 53 cases of oesophagal foreign bodies. The age group of 0 to 10 years is the most age group, namely 17 patients (32.7%) [3.9.10.11.12]

The main complaints that were most common were lumps in the location of ingested foreign objects by 79%, followed by complaints of odynophagia (51.1%), dysphagia (48.8%), sub-sternal pain (16.3%) and suffocation (6.9%). According to Sink et al. who conducted a study of 497 pediatric patients with foreign objects with the most frequent complaints were suffocation (49%), vomiting (47%), dysphagia and odynophagia (42%), cough (40%), and salivary drooling (40%). While Sahil et al. reported complaints of hyper-salivation as the main complaint reaching 50.4% followed by dysphagia (34%), pain (30.04%), dyspnea (6.9%), and cough (2.9%). [9,12,13]

Radiological examination is a supporting examination that must be performed on patients who present with complaints of being swallowed by a foreign object. In addition to plain photo examinations, computers tomography can be performed to diagnose foreign matter. Based on Guelfguat et al. computer tomography has a sensitivity of 97% and an accuracy of 98% for diagnosing oesophagal foreign bodies compared to radiology which is only 47% and 52%. Research conducted by Rybojad et al. of 198 patients found 68.8% of foreign matter can be detected through explicit photographs. Research by Sink et al. shows that the sensitivity of plain photo examination reaches

100% in the case of foreign coins, while non-metallic foreign objects are around 45%. In this study, all patients with a foreign coin were subject to a plain photographic examination without the need for a computer tomography examination to establish further diagnoses and management.[4.5.14.15]

Based on the length of time patients come to the hospital to get treatment, most patients come to the hospital in less than 24 hours, namely as many as 25 people with a percentage of 58.2%. Sink et al. reported from 543 patients with foreign bodies in the oesophagus, 82% of cases came within 24 hours of ingestion of foreign objects. In a study conducted by Dedhia et al., Patients present with a duration of complaints of ingestion of coins in the oesophagus with a range of 1/2 hour to 2160 hours, and the longer the coin is held in the throat, the less likely it is that the coin will drop spontaneously to other parts.[13,16]

During the intraoperative period, it is found that the foreign body of the coin is in the first narrowing to the fourth narrowing. The location of the foreign body from the first incisor varies, according to the patient's age. The location of the shortest coin foreign object from incisor 1 is 9 cm (narrowing I) in patients aged 4 years. In comparison, the furthest foreign body coin was obtained 23 cm from incisor 1 (narrowing IV) in a patient three years old. The location of foreign coins is in narrowing 1, namely in the cricopharyngeal area in 10 cases with a percentage of 23.3% where the distance of the foreign body from incisor 1 is 9 to 13 cm depending on the age of the patient. The location of foreign objects that were most frequently found was in the other narrowing as many as 28 cases with a percentage of 65.1% when the oesophagus crossed the aortic arch that is as high as thoracic 1 to thoracic 4, where the distance of a foreign body from incisor 1 is around 12 cm in children and 22 to 24 cm in adults. Whereas in the third narrowing found 3 cases (20.9%), namely narrowing due to suppression of the left bronchi. The third narrowing on radiological examination gives a picture as high as 5-6 thorax, where the distance of the foreign body from incisor 1 is about 16 cm in children and 27 to 30 cm in adults. Foreign objects that are in the fourth narrowing is diaphragmatic hiatus in 2 cases with a percentage of 4.6%. The average location of a foreign body is found 17 cm from the first incisor.

In general, around 60-70% of foreign bodies are in the first narrowing of the oesophagus. This is consistent with the literature that the site of the most common foreign body in the proximal oesophagus, cricopharyngeal or upper oesophagal sphincter. This is caused by changes in the striped muscle into a smooth muscle or the Cricopharyngeal muscle. The cricopharyngeal muscle more muscular contractions to push foreign bodies through the oesophagal sphincter then forwarded to oesophagal muscle whose contractions are relatively weaker so that it causes impaction of foreign matter just below the upper oesophagal sphincter or cricopharynx. Another place is the narrowing of the oesophagus caused by the crossing of the oesophagus with the aortic arch as much as 10-20%, bronchial and diaphragm as much as 20%. According to research conducted by Rybojad et al. from 192 cases, 44% of foreign bodies were in the first narrowing, 23% were in the second narrowing and 14% in the third narrowing. Reza et al., who conducted a study of 100 cases of oesophagal foreign bodies, reported that the average distance of a foreign body from the first incisor was 21.23 cm. The location of foreign bodies in the 1/3 proximal portion of the oesophagus is found in 78% of cases in the studies of Russell et al., at 10% found in the 1/3 medial section, and 10% found in the distal 1/3.[4,5,6,14,15]

Rigid oesophagoscopy is the gold standard for diagnosis and management of oesophagal foreign bodies. The size of the oesophagoscopy is adjusted to the patient's age. The type of forceps chosen is based on the type of foreign body and the size of the foreign body. After taking a foreign body, an evaluation of the oesophagal mucosa is performed to determine the complications of the oesophagus. Of the 43 patients, as many as five patients underwent treatment at the hospital for one day, 27 patients underwent treatment for two days, and nine patients underwent treatment for three days.[4-7]

Heinzerling et al. reported the duration of hospitalization in patients undergoing endoscopic Extraction of foreign body coins in the ENT-KL section was around 15 hours, and in the study of Russel et al.

about 63% of oesophagal foreign body patients who underwent inpatient oesophagoscopy under 24 hours, and 27% underwent treatment over 24 hours. Turkyilmaz et al. stated that out of 188 patients swallowed by foreign objects, the average length of hospital stay was 1.82 ± 1.6 days. Sung et al. reported of 316 patients who received esophagoscopy therapy due to foreign bodies, 50% had complications. Complications that occur ulceration (21%), laceration (14.9%), erosion (12%), perforation (1.9%). Sung et al.also stated the relationship between the duration of impaction of a foreign body, type and size of a foreign body to an increase in risk factors for complications due to oesophagal foreign bodies. Of the 43 patients who underwent oesophagoscopy procedures, there were no complications of oesophagoscopy procedures or complications of foreign bodies in thoesophagusus.[4.5.17-20]

5. Conclusion

The main complaints of foreign bodies are lumps, followed by odynophagia, dysphagia, sub-sternal pain and suffocation. The location of foreign coins is most often found in the second narrowing.

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