



Scarf pin inhalation; presentation and management; a case series

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ABSTRACT

Background: Pin inhalation is an accidental entry of a pin into the respiratory passages. This study aims to shed the light on pin inhalation as a hazard and show the magnitude of such preventable thoracic problem and determine the safest method of management.

Patients and methods: This is a retrospective single center case series, conducted during 18 month period from January 2016 to April 2017. All patients with pin inhalation had been collected and analyzed according to the age, gender, time between aspiration to presentation and symptoms and signs, number of attempts, bronchoscopic or open removal of the pins with complications.

Results: The total number of patients in this study was 162. The mean age was 11years. Pin inhalation accident was more common in patients less than 10 years in males and less than 20 years in females. The most common gender was female (73%). The most common presenting symptom was cough (54%). The left tracheobronchial tree was the most common site for pin lodgment 107 (67.3%) followed by the right side 23 (14.4%). The majority of the pins were extracted in one piece (94%). Thoracotomy was done in one patient, no death reported.

Conclusion: Sharp pin inhalation is a serious hazard and can have lethal outcome. History is the major parameter to start the diagnosis of pin inhalation and radiography is the gold standard to confirm the diagnosis.

1. Introduction

The number of patients presenting to emergency rooms with foreign body aspiration is increasing [1]. The majority of deaths occur in children under the age of three years [2]. Foreign bodies in the airway usually cause sudden onset of coughing, choking, and cyanosis. Despite this, in over half of all patients there is a delay in diagnosis ranging from days to years because symptoms are attributed incorrectly to asthma, croup, or other respiratory diseases. Confirmation or exclusion of a foreign body in the airway ultimately requires endoscopy [1]. Radiographs of the neck and chest may be normal or show direct (foreign

body) or indirect signs [2]. Computerized tomography (CT) can be used to demonstrate airway foreign bodies and they will identify the secondary changes of obstructive emphysema, atelectasis, and lobar consolidation [1]. The main treatment modality is either flexible or rigid bronchoscopy [3].

Pin inhalation is a special type of foreign body inhalation with its specific clinical course [3]. The aim of this study is to refine the clinical scenario and management strategy of pin inhalation in line with PROCESS guidelines [4].

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2. Patients and Methods

This is a single center, retrospective case series conducted during 18 months from January 2016 to April 2017. All consecutive patients with pin inhalation have been included. The patients were managed in governmental settings. All of the patients had been subjected to complete clinical and radiological evaluation, mainly Chest-X-Ray which was performed for all of the patients.

The procedure (rigid bronchoscopy) was carried out under general anesthesia with continuous monitoring of electrocardiography, saturated oxygen, non-invasive blood pressure and airway pressure.

Steroid was given routinely to those patients with laryngeal edema and bronchospasm. Most of the patients were discharged 24 hours after an uncomplicated procedure. When the rigid bronchoscopy failed, the procedure converted to a standard posterolateral thoracotomy. The patients were seen two weeks after the intervention in clinic, later on, they were followed up by phone call every six months for two years. The research has been registered in Research Registry, the registration number is registry6385.

3. Results

This study includes 162 patients, their age ranged from 8 months to 38 years (mean age 11years). The female to male ratio was approximately 2.7:1. The most common age group in male patients was less than 10 years while the most common age group in female patients was between 10 and 20 years. About 141 patients (87%) were presented less than 48 hours of pin aspiration.

The main presenting symptom was coughing (88, 54%) followed by dyspnea (10, 6%), chest infection (4, 2.4%) and strider (2, 1.2%). Other symptoms like vomiting, hemoptysis, neck pain, strider and wheeze were seen rarely (each present in one case (0.6%)). Positive history of pin aspiration was reported in 109 (67%) patients. The needle migrated into the stomach in 4 (2.5%) patients after the first bronchoscopic trial, another 4 (2.5%) patients underwent the second bronchoscopic trial and the pin removed successfully. One patient (0.6%) was operated on to remove the pin after second bronchoscopic trial failure.

The main site of pin impaction was the left main bronchus and its branches (107, 67.3%) followed by right main bronchus and its branches (23, 14.4%). In the he remaining (29, 18.3%) patients, the pins were found in the trachea, subglottic area, vocal cord, pharynx, and upper esophagus. they were extracted by a single attempt in 133 patients (86.36%). In 144 (94.12%) patients, the pins were extracted in one piece, while in the other 9 (5.88%) cases, the pins were fragmented (the plastic tip ball was detached and fall in the airway which required further attempts for extraction.

No complication was reported in 157 (96.9%) cases. Asthmatic exacerbation, hemoptysis, epistaxis, vomiting, simple oozing from pin impaction site and tooth loss were reported in few cases (each in one case, 0.6%), no death was reported during the study period.

4. Discussion

Pin inhalation is a common thoracic problem in the Muslim living countries [5]. There is a common story regarding women wearing headscarves in the Islamic countries which is a socio-cultural and religious tradition. Women used to hold the headscarf pins by their lips while wearing headscarves [3]. Any movement such as laughing, talking or coughing predisposes them to pin inhalation, especially in the young teenage groups where they have recently accustomed in wearing Hijab [3]. Pin inhalation rarely reported in male patients. In the study of Al Sarraf and associates, there was no male patients while Dar et al. had only 2 male cases out of 36 patients [6–8]. In the current study, a growing number of male patients was reported (female to male ratio 2.7:1). This may be due to the uncontrolled wide spread of the pins. In contrast to other types of foreign body inhalation, pin inhalation

presents early in the disease course [3,9]. In this study, most (80%) of the patients presented within 24 hours and 50% presented with the first 6 hours of the incidence. This may be due to the fact that sharp object inhalation is taken seriously by lay people and radio-opacity of the pins helps early diagnosis. Patients with pin inhalation usually report that the incidence had been caused by coughing, laughing or talking while the pins were being detained between the lips [3,10]. The authors of the current study reported the same finding.

Patients with foreign body inhalation classically complain from of dyspnea, coughing, wheezing, stridor, cyanosis [8]. In this report, cough and dyspnea were the main presenting symptoms just like the study of Baram et al. regarding pin inhalation [3].

Challenging in the diagnosis is common in case of foreign body inhalation [6]. The condition may not be thought of in some patients, causing complications such as long term dyspnea, recurrent pulmonary infections, bronchiectasis and atelectasis [3]. However, this difficulty is not the case in scarf pin inhalation because of radio-opacity and specific shape of the pins. All of the cases in the current paper have been diagnosed using chest radiography.

In young children and infants, foreign bodies dislodge in both right and left main bronchi with similar frequency, while in cases of pin inhalation, left main bronchus is more common than the right one. in the current study, left side impaction was seen in 67.3% of the patients [3]. This may be explained by the narrower lumen of the left tracheobronchial tree with production of greater force of aspiration during the accident. Rigid bronchoscopy is the preferred technique for the management of the patients with foreign body aspiration including pin inhalation [7]. In this study, all of the patients underwent rigid bronchoscopy under general anesthesia, only in one of the patients (0.6%) the procedure failed and the pin was extracted through thoracotomy.

Death is an extremely rare outcome of pin inhalation. Othman et al. reviewed the literature and found only one death related to scarf pin inhalation [5]. The outcome of this study was favorable with no report of death.

There are critical limitations to this study; First. The design of the study is case series. Second. The sample size is small and lastly, the experience is a single center.

In conclusion, sharp pin inhalation is a serious hazard and can have lethal outcome. History is the major parameter to start the diagnosis of pin inhalation and radiography is the gold standard to confirm it. Performing rigid bronchoscopy is the ideal management strategy. With collaboration of medical staffs including doctors and patients, mass media should be involved in educating people to avoid this complication.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request".

Provenance and peer review

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Author contribution

Mustafa A. Abduljabbar¹, Sabah N. Jabir², Okba F. Ahmed³, Fahmi H. Kakamad⁴: Surgeons and physician supervising the management, revising the manuscript. Final approval of the manuscript.

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Declaration of competing interest

None to be declared.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.amsu.2020.12.044>.

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