



Case report

Depressed mother penetrating her Baby's heart with a sewing needle during COVID-19 lockdown: A case report

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ABSTRACT

Background: The full lockdown was carried out in China as well as in other countries during the COVID-19 pandemic, and it proved to be effective in reducing the rate of transmission in the early stage of the pandemic. However, the negative effects of full lockdown on human mental health should be taken into consideration.**Case presentation:** During COVID-19 lockdown, a 3-month-old male infant was injured with a sewing needle penetrating into his heart by his mother with postpartum depression. The mother had a history of depression, and she reported depressive feelings during quarantine before injuring the infant. In addition, her own mother's health condition had worsened lately following long-term stroke sequelae. These factors may have contributed to her new depressive episode, which caused her to injure her baby with a threaded sewing needle with no witness. The injury was discovered the next day by the infant's paternal grandmother. The baby received an emergency sewing needle removal operation and recovered uneventfully.**Conclusions:** Special attention should be paid to persons with a high risk of mental disorder during this pandemic, in order to avoid devastating adverse events or deterioration of conditions for them and those around them.

1. Introduction

The COVID-19 pandemic has changed people's lives tremendously, apart from the staggering deaths. The full lockdown in China and many other countries was the first response to reduce the transmission of the virus, and it has been widely acknowledged to have been a helpful intervention in the early stage of the pandemic. However, the full lockdown has also caused great harm to the social economy, especially human mental health including significantly elevated anxiety and depression [1, 2]. A study to identify the psychosocial effects of the COVID-19 pandemic in adults found that women and prior psychiatric history are higher risk factors for increased anxiety and

depression symptoms [1, 3]. This study reported a case of postpartum depression and its harm to the patient's infant.

2. Case presentation

A 3-month-old male infant was admitted to our institution after being found with a sewing thread protruding from his chest on March 17, 2020. Upon arrival, the baby was agitated, but his vital signs seemed stable with no visible shortness of breath. A black sewing thread was found deep in the middle of the front chest, and there was erythema surrounding it (Figure 1A). There were no visible injuries or other remarkable findings on the skin. On auscultation, the respiratory

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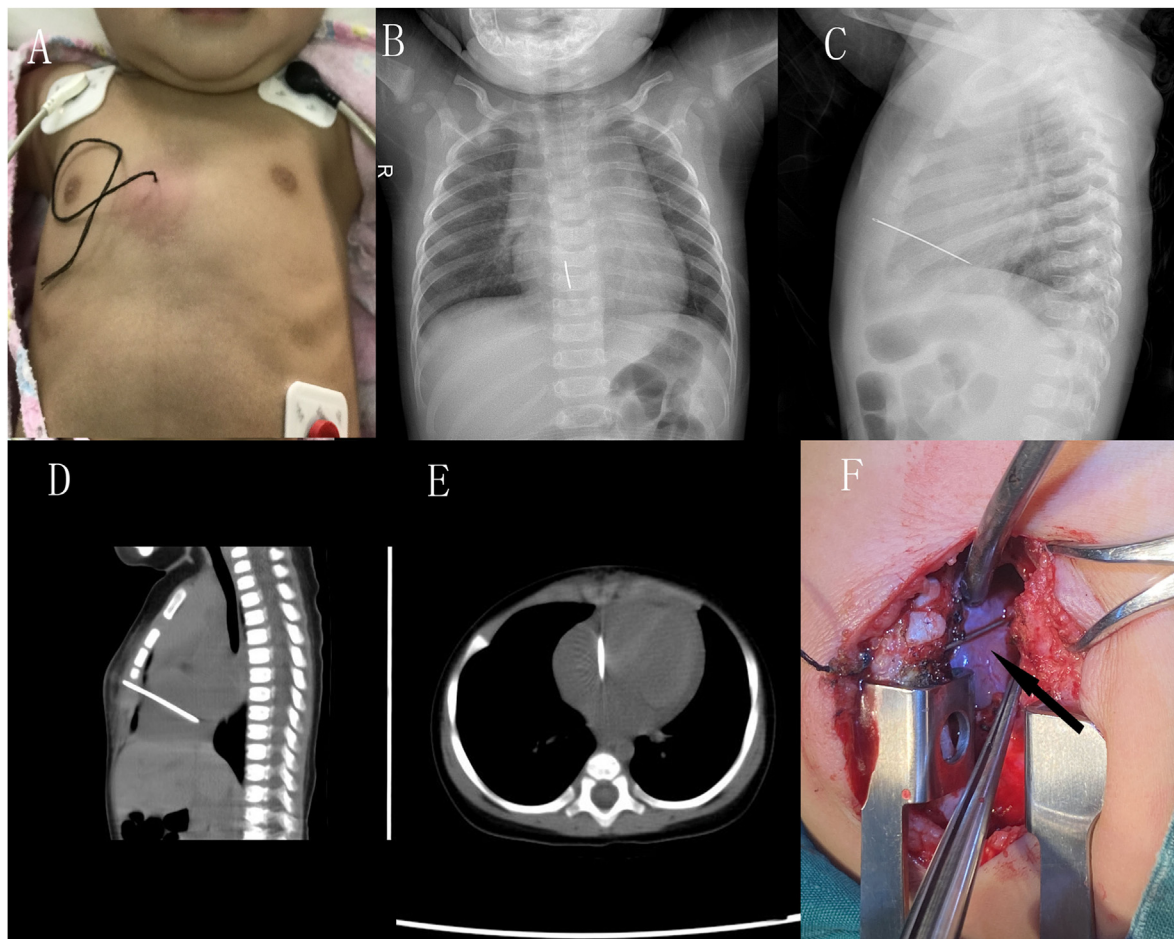


Figure 1. Signs of injury. A) A black sewing thread connected with a sewing needle (not shown in this panel as it is completely in the heart and chest wall) was found deep in the middle of the front chest with erythema around. B) Anteroposterior and C) lateral chest radiograms showed a linear-shaped metallic density within the cardiac silhouette. D) Sagittal and E) cross-sectional CT images showed a foreign body penetrate the heart through the junction of the right ventricle and the atrium. F) Intraoperative view visualizing the needle (arrow).

sound was clear bilaterally without rales. The heart rate was 189 beats per minute. The heart sound was normal without murmur.

Due to the depth of the thread within the body, it was highly suspected to be connected with a needle inside the body. Anteroposterior and lateral chest radiograms were performed, and a sewing needle was found penetrating into his heart (Figure 1 B, 1C). A chest computed tomography (CT) further showed that the needle had penetrated into the right atrium; the entrance was close to the right atrioventricular sulcus, and the exit was from the posterior aspect of the right atrium (Figures 1D, 1E).

Due to continuous bleeding from the heart, an emergency operation was immediately performed. Intraoperative transesophageal echocardiogram surveillance showed significant pericardial effusion of 15mm in depth at maximum in the right pericardial cavity, and a 42 mm long needle-shaped hyperechoic object from the atrioventricular sulcus to the right atrium. However, there was no evidence of valvular regurgitation under echocardiogram. Under general anesthesia, a lower partial sternotomy was performed, and the needle was successfully retrieved after partial pericardiotomy without cardiopulmonary bypass. The needle hole in the heart was closed with suture directly (Figure 1F). Pus could be seen along the route of the needle. The chest wall and pericardial cavity were flushed with diluted iodine complex and iodine complex sequentially. The operative time was 85 min. The postoperative course was uneventful. The patient was

returned to our institution for hemangioma treatment by dermatologists one month later. The continuous follow-up for one year and four months showed that the baby did well with normal growth and development. Written informed consent for publication was obtained from parents.

3. Discussion

The patient's father expressed concerns regarding the mother's history of depression, which started about 3 years ago, but had never relapsed after treatment until the recent COVID-19 lockdown. The mother told the father before injuring the infant that she was feeling depressed due to the lockdown. In addition, her mother's own health condition worsened lately following long-term stroke sequelae. These are two stressors which may easily cause a new depressive episode in a person with a history of mental illness. Since the father was working during the day and only the mother stayed at home with the baby, the injury was not discovered until the infant's paternal grandmother came to visit the next day. It was extrapolated that the infant was injured the day before admission. The mother also had self-inflicted injuries from burning her hand with boiling water and had been sent to the psychiatry hospital.

Generally, penetrating heart injuries by sewing needles occur both in adults and children unintentionally [4, 5], from self-infliction during

mental disorder episodes [6, 7], or drug abuse [8]. This kind of cardiac injury can be life-threatening due to major hemorrhage or cardiac tamponade, but the chance to compromise an important cardiac structure such as coronary artery (4–12%) or result in ventricular septal defect (6–7%) is low [9, 10]. In our case, the needle was threaded so that it was able to be identified early, and the puncture site was in the right atrium, which would typically cause less bleeding compared to a ventricular penetrating site.

The COVID-19 pandemic has changed people's lives tremendously, apart from the staggering deaths. Although the full lockdown has been widely acknowledged to have been an effective intervention in the early stage of the pandemic, its resulting collateral damages and negative effects are currently still under evaluation, such as massive economic loss, death or increased costs in treating patients with conditions other than COVID-19 due to delayed attendance, and great harm to human mental health due to the considerable change in daily life; in particular, the lockdown especially seemed to worsen the status of those with mental illness. A study among youth that experienced the COVID-19 pandemic showed that being woman is a significant predictor of stress, anxiety, and depression [11]. The prevalence of postpartum depression in Chinese women at 6–12 weeks postpartum was as high as 30.0% during COVID-19 pandemic [12]. Also, a significant increase in anxiety and depression was reported in the general Chinese population after the pandemic [13]. Being female, postpartum, under quarantine, and having a history of depression are all high-risk factors to causing depression in our case, but unfortunately, no predictive prevention was placed for the mother. Indeed, the world lacked efficient social supports and psychological interventions that should have accompanied the lockdown policy. Thus, psychological interventions are necessary for people in lockdown.

Ethics approval and consent to participate

The study was approved by institutional review board.

Declarations

Author contribution statement

Xicheng Deng and Peng Huang: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Jinghua Wang and Jinwen Luo: Performed the experiments; Contributed reagents, materials, analysis tools or data.

Xiaohui Yang, Mei Bai and Ruoyi Xiao: Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data included in article/supp. material/referenced in article.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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