The First Reported Case of Hemoptysis After Silicone Gel Breast Implants

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Case report

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Abstract

Background: Hemoptysis after silicone breast prosthesis surgery has not been reported so far, and the mechanism is unclear.

Case presentation: A 25-year-old young woman presented hemoptysis after silicone breast prosthesis replacement surgery. CTA revealed diffuse interstitial, alveolar, and terminal bronchial exudate changes in absent of pulmonary embolism. Noninvasive ventilator assisted breathing, combined with atomized inhalation of budesonide 2ml every 8h and intravenous infusion of hydrocortisone 100mg every 12h. Chest CT improved significantly 3 days later, and discharged 10 days later.

Conclusions: Diffuse alveolar hemorrhage might be the cause of hemoptysis after silicone breast augmentation, and glucocorticoid treatment is very effective. However, if pulmonary imaging suggested diffuse pulmonary hemorrhage, BAL and lung biopsy should be performed to confirm the clinical diagnosis before treatment.

Introduction

Silicone gel breast implants were stopped from the U.S market for cosmetic use in 1992 due to safety concerns. They were reintroduced in 2006 after Food and Drug Administration (FDA) approval, with extensive follow-up studies, continued analysis of explanted devices, and more detailed product labeling (1). Major local complications included infection, malposition, capsular contracture, seroma, extrusion, and implant rupture (2). The long-term health outcomes are interested in 1) cancer; 2) connective tissue, rheumatologic, and autoimmune disease; 3) neurologic diseases; 4) reproductive issues; 5) offspring issues; and 6) mental health issues. So far, there is no report of hemoptysis after silicone breast prosthesis surgery. The mechanism of hemoptysis is unclear.

Case Description

A 25-year-old young woman was transferred to the emergency department because of hemoptysis after breast silicone prosthesis replacement surgery. She felt a slight chest tightness and short of breath without chest pain and syncope. Two year ago, she presented a similar symptom after breast prosthesis implantation surgery. She denied history of drug and food allergies. In the emergency department, the heart rate was 118 beats/minute, the respiratory rate 25 breaths/minute, the oxygen saturation 92%, while he was breathing 3 liters of oxygen through a nasal cannula, and the blood pressure was 98/70 mmHg. Emergency bedside brain natriuretic peptide (BNP) was 16.2pg/ml (normal range, 0-100). Arterial blood gas indicated type I respiratory failure. Other test results are shown in Table 1. Pulmonary artery Computed tomography angiography (CTA) revealed that multiple ground glass density shadows and high density shadows in both lungs without pulmonary embolism (figure, A). Noninvasive ventilator assisted breathing, combined with atomized inhalation of budesonide 2ml every 8h and intravenous infusion of

hydrocortisone 100mg every 12h. Two days later, the patient had no more hemoptysis, chest CT improved significantly 3 days later (figure, B), and discharged 10 days later (figure, C).

Table 1
Laboratory Data

Variable	Reference Range, Adults*	On Arrival, Emergency Department	Three days after admission
Hemoglobin (g/liter)	115-150	124	114
White-cell count ($\times 10^9$)	3.5-9.5	17.16	12.90
Eosinophil count ($\times 10^9$)	0.02-0.52	0	0
Basophils count ($\times 10^9$)	0-0.06	0.02	0.01
Monocyte count ($\times 10^9$)	0.1-0.6	0.73	2.8
Platelet count ($\times 10^9$)	125-350	175	158
D-dimer quantitative detection (mg/liter)	0-0.55	1.88	4.69
B-type natriuretic peptide (pg/ml)	0.00-100.00	16.2	
Fraction of inspired oxygen		33%	
pH	7.35-7.45	7.428	7.38
Partial pressure of carbon dioxide (mm Hg)	35-45	34.8	36
Partial pressure of oxygen (mm Hg)	80-100	58.0	90
Blood oxygen saturation (%)	95-98	92.3	98

Discussion And Conclusion

The mechanism of hemoptysis after silicone breast augmentation is unclear. In this case, the patient presented hemoptysis after her first breast augmentation surgery two years ago. Coincidentally, she experienced the same symptoms again after silicone breast prosthesis replacement surgery, and glucocorticoid treatment is very effective. According to the eosinophil and basophil counts were not rise, we speculated that diffuse alveolar hemorrhage (DAH) might be the cause of hemoptysis. DAH is a clinic pathologic syndrome presenting the accumulation of intra alveolar red blood cells originating from the alveolar capillaries. All causes of DAH have the common denominator of an injury to the alveolar microcirculation. Bronchoalveolar lavage (BAL) confirms the clinical diagnosis of DAH; however, the lung

biopsy may be required to confirm the underlying histology (3). Unfortunately, in this case, because diagnostic therapy with glucocorticoid worked well, neither BAL nor lung biopsy was performed.

Abbreviations

Diffuse alveolar hemorrhage (DAH); Bronchoalveolar lavage (BAL); brain natriuretic peptide (BNP); Computed tomography angiography (CTA); Food and Drug Administration (FDA).

Declarations

Ethics approval

Not applicable.

Consent for publication

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 Editors-in-Chief of this journal.

Availability of data and material

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

GYZ was a major contributor in writing the manuscript. TX contributed to conception the manuscript. PYZ revised the manuscript. All authors read and approved the final manuscript.

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Figures

Figure 1

Pulmonary artery Computed tomography angiography (CTA)

Figure 2

chest CT improved significantly 3 days later

Figure 3

chest CT on discharge