Acute Pneumonitis after instillation of Povidone iodine for Chemical Pleurodesis in Secondary Spontaneous Pneumothorax: A case report.

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ABSTRACT

Secondary spontaneous pneumothorax is common in adult and is often life threatening. Surgical intervention is preferred, however chemical pleurodesis is also widely recommended in the treatment of recurrent pneumothorax of different etiologies. Variety of agents such as erythromycin, tetracycline, autologous blood and talc slurry are available for chemical pleurodesis among which povidone iodine is cheap, easily available, effective and safe. In this paper, we report the case of acute pneumonitis after pleurodesis using povidone iodine in a 33 years old female with a known case of lymphangioleiomyomatosis with a history of recurrent pneumothorax.

Chemical pleurodesis was performed using povidone iodine after complete expansion of lung and absence of persistent air leak which was confirmed clinically and radiologically. Post procedure, the patient complained of right sided chest pain and cough. Fever, sputum production and shortness of breath was absent. Chest X-ray revealed new consolidation and infiltrations in the right middle zone. Subsequent CT chest showed extensive parenchymal consolidation and ground glass opacities in the right middle lobe, representing pneumonia with acute lung injury.

The acute pneumonitis spontaneously resolved with supportive care and the patient was discharged after seven days. Though drug induced pneumonitis is not a usual complication of povidone iodine, it is a possibility and has to be considered.

Keywords: Pleurodesis, Pneumonitis, Pneumothorax, Povidone iodine

BACKGROUND

Acute pneumonitis is a common problem that has been seen in patients treated with pleurodesis which has great impact on the quality of life. Though the pathophysiologic mechanism for acute pneumonitis is still unclear, it has been suggested that acute pneumonitis has been caused by pulmonary deposition and trans-pleural absorption of the sclerosing agents which occurs through lymphatic stomata, whose openings are distributed in the parietal pleura.[1]

Pleurodesis is a procedure to achieve symphysis between the visceral and parietal pleura to prevent recurrent pneumothorax and is usually achieved by either using a chemical agent or by physical abrasion of the pleural surfaces during thoracotomy or thoracoscopy.[2] Povidone iodine is an inexpensive, safe, easily available topical antiseptic agent which has been mostly used as a sclerosing agent for chemical pleurodesis.[3] It can also be infused through intercostal drain under local anesthesia and if necessary, can be repeated, with excellent tolerance.[4]

While uncommon, a few studies have reported acute pneumonitis following chemical pleurodesis treated with Viscum album extract[1] and talc[5] as a sclerosing agent in the patient of malignant pleural effusion. We hereby report a case of pneumonitis with povidone iodine following chemical pleurodesis in patient with spontaneous pneumothorax.

CASE PRESENTATION

A 33-year-old female patient, a known case of lymphangioleiomyomatosis (LAM), with a history of recurrent pneumothorax was admitted in our pulmonology department with presenting complains of shortness of breath with right sided chest pain for one day. Chest X-ray and CT chest revealed right sided pneumothorax for which chest tube was inserted (figure1). After chest tube drainage, patient became comfortable. On day 3, right lung had expanded on chest X-ray and there was absence of air leak.

Chemical pleurodesis was performed using povidone iodine, after complete expansion of lung and absence of persistent

air leak which was confirmed clinically and radiologically. Patient was premedicated with local anesthetic injection lignocaine 2% (2mg/kg) with 50 ml of normal saline through the intercostal chest tube. After that, a solution of 20ml of 10% povidone iodine was mixed with 80 ml of normal saline and injected through the chest tube in the pleural cavity and tube blocked for two hours. After two hours, tube was unclamped and connected to underwater seal drainage system. Patient developed chest pain and cough following pleurodesis. On the next day chest X-ray was done which showed an infiltration and consolidation in the right lower zone (figure 2a). CT chest showed extensive parenchymal consolidation with patchy ground glass opacities with interlobular septal thickening in the right middle lobe suggestive of pneumonitis (figure 2b).

On the suspicion of infection, patient underwent bronchoscopy. There was no increased secretion in the tracheobronchial tree. Broncho-alveolar lavage done from right middle lobe, which was normal and bacterial and tubercular profile of the patient was negative. The patient also did not develop fever or sputum production. White blood cell count was 10,800 /uL with 72 % neutrophil. C-reactive protein was 28 mg/dl. Blood chemistry showed serum creatinine 0.8 mg/dL, urea 14 mg/dl, potassium 5.1 mmol/L, serum albumin 3.1 mg/dL. Serum procalcitonin was also normal. The patient was managed on supportive care with NSAID (ketorolac) and empirical antibiotic (levofloxacin).

Five days after the supportive care, patient had decreased chest pain and a follow up chest X-ray showed markedly decreased pulmonary infiltrations. The patient was observed until the lung had completely expanded and there was no residual pneumothorax, which was confirmed by chest radiograph. Only then the chest tube was removed. The patient was discharged after seven days with normalized laboratory findings and oxygen saturation 97% at room air. Follow up chest X-ray showed complete resolution of the right lower zone infiltrations.

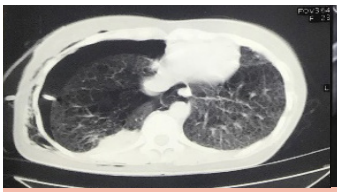
Figure 1


Figure 2a

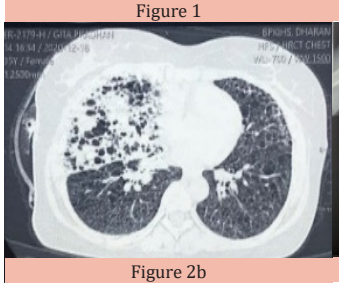
Figure 2b


Figure 3

Figure 1 Initial CT Chest showing right sided pneumothorax; Figure 2a and 2b showing right sided consolidation with patchy ground glass opacity after instillation of Povidone iodine; Figure 3 showing spontaneous resolution of right sided pneumonitis.

DISCUSSION

Lymphangioleiomyomatosis (LAM) is a cystic disorder which primarily affects the lungs especially in females of childbearing age. It occurs as a result of mutations in tuberous sclerosis genes that results in cystic lung disease. It presents with the symptoms of dyspnea and chest pain and the most common presentation is secondary spontaneous pneumothorax (SSP).[6] In SSP, the most prominent clinical feature is dyspnea and chest pain which coincides with the finding of our patient.[3] In most cases of secondary spontaneous pneumothorax, tube thoracostomy is recommended.[7] Similarly, as in our case tube thoracotomy was done. Pleurodesis is recommended following secondary spontaneous pneumothorax. While there are multiple agents used for the same, povidone iodine for chemical pleurodesis has been our preferred choice keeping in the mind its cost, accessibility, safety, ease of administration and the number of administrations needed to achieve a complete response.[3]

Various studies conducted in different center has shown povidone iodine as good choice for sclerosing agent for chemical pleurodesis. The mode of action of iodopovidone still remains unclear. It may be related to the low pH of the sclerosing solution, or due to the strong oxidative and cytotoxic properties of iodine can induce a potent inflammatory response in the wall of any fluid containing structure.[3,8,9]

There have been variable reports of complications, such as hypotension, severe loss of vision and empyema thoracis following instillation of povidone iodine for pleurodesis.[8,10] While pneumonitis has not been reported with povidone iodine, few cases of pneumonitis has been reported following talc pleurodesis[5] as well as that following pleurodesis with Viscum album extract.[1]

Our report describes an initial occurrence of drug induced acute pneumonitis following chemical pleurodesis with povidone iodine. While unusual, this complication has to be kept in mind along with possibility of concurrent infection whenever a new infiltrate or symptoms arise after chemical pleurodesis. Before concluding the event as drug induced, infection needs to be ruled out as done in our case.

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