CLINICAL VIGNETTE

Bilateral Pneumothorax Following Acupuncture

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A 47-year-old man presented to the emergency department for chest pain. The pain was sharp and substernal with no radiation to other locations. It started while he and his wife were walking, lasted for 15 minutes, and went away spontaneously. He never had this pain before. The pain was associated with mild dyspnea that also resolved spontaneously. About 2 hours prior to the pain he had acupuncture. Past medical history was notable for stage III colon cancer. The tumor was resected 8 months prior via laparoscopic surgery, and he had done well post-operatively. He was started on chemotherapy 7 months prior with oxaliplatin with fluorouracil (5FU) and folinic acid, but he stopped one month later after developing a severe case of colitis. Just a few weeks prior he was diagnosed with a liver mass and was going to have this resected in the next few weeks. Prior to the chest pain he was feeling fine. He worked in an office and went surfing twice per week. He denied any recent injury to the chest from surfing. No tobacco, alcohol, or illicit drug use. He went to acupuncture periodically for assistance with stress relief. He was currently not taking any mediations. No significant family history for cardiac disease. Vital signs demonstrated a blood pressure of 100/50 with a pulse of 60, a temperature of 97.2, and an ambient air O2 saturation of 94%. Relevant physical exam findings included absence of jugular venous distention, a midline trachea, regular cardiac rate and rhythm with no cardiac murmurs, rubs, or gallops, and breath sounds that were clear to auscultation bilaterally. Abdominal exam was unremarkable other than well healed incisions from prior laparoscopic surgery. Peripheral extremities showed no clubbing, cyanosis, or edema.

Electrocardiogram showed normal sinus rhythm. Chest x-ray PA and lateral showed a small right sided pneumothorax. A CT pulmonary angiogram (Figure 1) was also done, and it demonstrated small bilateral pneumo-thoraces occupying approximately 10% of the thoracic volume. There was no evidence of pulmonary embolism, consolidation, or mass. There was minimal pericardial effusion and minimal bilateral pleural effusions. The subsequent morning the pneumothoraces were improved on chest x-ray. He remained hemodynamically stable and was discharged with outpatient follow up. The patient did well in terms of the pneumothorax, but his cancer progressed despite multiple rounds of chemotherapy. Eighteen months later abdomen CT demonstrating extensive disease, along with a chest CT demonstrating 3 left sided lung nodules. He was readmitted 21 months later with intractable abdominal pain and large ascites. Chest imaging demonstrated bilateral pleural effusions right greater than left. Paracentesis was done with removal of 4 liters of ascites fluid, his pain was improved, and he was discharged home.

Figure 1 – CT Pulmonary Angiogram demonstrating bilateral small apical pneumothoraces.

The cause of this patient's initial chest pain was believed to be due to the bilateral pneumothoraces. The cause of the pneumothoraces could have been due to various causes. Primary spontaneous pneumothorax is more common in men and smokers. These patients often also have some type of bullous lung disease. This patient did not smoke, and there were no bullae on the CT pulmonary angiogram. Secondary spontaneous pneumothorax can occur in patients with chronic lung disease, but this patient did not have this. He had minimal pleural and pericardial effusions, and less than 2 years later he went on to have advanced metastatic colon cancer with significant pleural effusions. There was no evidence of a structural defect that could have contributed to the pneumothorax at the time of presentation. He surfed periodically, but not recently and there was no history of any chest trauma while surfing, making traumatic pneumothorax unlikely. Hours before presenting to the emergency department he had acupuncture treatment. The timing of the chest pain and pneumothorax on imaging supported a diagnosis of pneumothorax secondary to acupuncture.

Acupuncture is a technique in which practitioners stimulate specific points on the body - most often by inserting thin needles through the skin. It is one of the practices used in traditional Chinese medicine.[1] Acupuncture may help ease chronic low-back pain, neck pain, and knee pain, and it may have a beneficial effect on tension and migraine headaches.[1] Current evidence suggests that many factors—like expectation and belief—that are unrelated to acupuncture needling may play important roles in the beneficial effects of acupuncture on pain.[1] Our patient was using acupuncture to relieve stress. The medical literature has multiple case reports of pneumothorax related to acupuncture. A 2013 vignette reported two patients presented to the emergency department with unilateral pneumothorax. Both received acupuncture to the chest. The first was symptomatic minutes after needle placement. The second was symptomatic 90 minutes after needle placement. Both required hospital admission and chest tube placement and did well.[2] This patient had small bilateral pneumothorax about 2 hours after acupuncture and did not require chest tube placement. He was admitted to the hospital overnight for monitoring and was discharged the next day. Although there are multiple similar case reports, the incidence of pneumothorax following acupuncture is not clear.[2] A 1980 paper reported bilateral pneumothorax after midthoracic paraspinal acupuncture with symptoms 10 minutes after treatment was completed.

The authors suggested that unilateral and even bilateral pneumothorax may be a more common complication of acupuncture that previously thought.[3] More recently a 2017 article categorized complications related to acupuncture pre-senting to an emergency department in Seoul, Korea, over a five-year period. There were 10 cases of pneumothorax (one combined with pneumomediastinum) and two cases of pneumomediastinum induced by acupuncture. The mean time between acupuncture and emergency department admission was 1.6 days. The pneumothorax was unilateral in eight cases and bilateral in two. Eight patients underwent tube thoracostomy and were admitted to the hospital.[4] Adequate competency-based training should be provided to maximize the safety of acupuncture. Fortunately, this patient did not need a chest tube, and he was able to go home the next day.

REFERENCES

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