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**CASE REPORT**

**Spontaneous pneumomediastinum in a scuba diver**

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**Key words:**  
Diving;  
Pneumomediastinum, diagnostic;  
Radiography, thoracic;  
Sports medicine

Pneumomediastinum usually occurs following an air leak from the lungs, or from a perforated oesophagus. We report on a 30-year-old man who developed pneumomediastinum after scuba diving. The patient presented with acute onset of throat pain, odynophagia, and hoarseness of voice. The literature is reviewed for this condition.

Spontaneous pneumomediastinum, first reported by Hamman in 1939, is an uncommon self-limiting condition that predominantly affects young, tall, thin, and healthy men in the second to fourth decades of life and, occasionally, pregnant women. It has been reported in patients undergoing mechanical ventilation, following ecstasy abuse, women in labour, hyperemesis gravidarum, diabetic ketoacidosis. Occurrence has also been linked with underlying pulmonary conditions such as asthma, idiopathic pulmonary fibrosis, severe acute respiratory syndrome, and with sporting activities such as weightlifting, football, basketball, and volleyball.

**Introduction**

Pneumomediastinum usually occurs as a result of a pulmonary air leak that is induced by a variety of conditions. One important differential diagnosis is perforated oesophagus. We report on a patient who presented with pneumomediastinum after scuba diving.

**Case report**

In August 2004, a healthy 30-year-old man who was a professional scuba diver presented with acute onset of throat pain after diving to a depth of around 40 feet. He also complained of odynophagia and hoarseness of voice. He had no fever, chest pain, or dyspnoea and his pulse rate was 69 beats per min and blood pressure was 154/81 mm Hg. Subcutaneous emphysema was detected in his right neck and upper chest wall. Air entry to both lungs was equal and satisfactory. Laboratory analyses showed mildly elevated white cell count (11.6 x 10⁹ /L, with neutrophil predominance, 7.9 x 10⁹ /L) and normal liver and renal functions.

Lateral neck radiograph revealed an abnormal gas shadow in the retropharyngeal area and subcutaneous emphysema. Chest X-ray revealed pneumomediastinum without evidence of pneumothorax. This was confirmed on computed tomographic scan (Fig). A subsequent contrast swallow study ruled out oesophageal perforation. The patient was treated conservatively and was discharged on the third day after radiograph confirmed complete resolution of the pneumomediastinum.

**Discussion**

Spontaneous pneumomediastinum, first reported by Hamman in 1939, is an uncommon self-limiting condition that predominantly affects young, tall, thin, and healthy men in the second to fourth decades of life and, occasionally, pregnant women. It has been reported in patients undergoing mechanical ventilation, following ecstasy abuse, women in labour, hyperemesis gravidarum, diabetic ketoacidosis. Occurrence has also been linked with underlying pulmonary conditions such as asthma, idiopathic pulmonary fibrosis, severe acute respiratory syndrome, and with sporting activities such as weightlifting, football, basketball, and volleyball.

Diving-related diseases include decompression sickness, baro-sinusitis, perforated tympanic membrane, temporo-mandibular joint dysfunction, arterial
Pneumomediastinum is a condition that occurs when gas leaks from the lungs into the mediastinum, the space between the two pleural cavities of the thorax. This can be a result of pulmonary barotrauma sustained during scuba diving, which can cause damage to the alveoli and ruptures them, allowing air to leak into the mediastinum. The symptoms can include chest pain, shortness of breath, and a feeling of pressure in the chest. Diagnosis of pneumomediastinum is largely based on clinical findings and imaging. In most cases, it can be demonstrated on routine chest X-ray, although the diagnosis may be missed in up to 30% of cases, especially when it is mild. Computed tomography of the thorax increases the chance of diagnosis and provides additional information about any co-existent pathology.

Pneumomediastinum is not usually fatal although cases of tension pneumomediastinum have been reported. Pneumothorax can be fatal when it occurs under water and may rapidly progress to a life-threatening tension pneumothorax when the diver surfaces (much more rapidly than on land because of Boyle’s Law). Other diving-related problems can also be serious. When simple pneumomediastinum is diagnosed, prompt recognition of the underlying condition and exclusion of potentially life-threatening conditions with similar symptoms (such as dissecting aortic aneurysm, angina pectoris, and mediastinitis) remain the first priority. Divers may continue to dive despite medical contra-indications. Physicians should thus be aware of the possibility of pneumomediastinum, its differential diagnoses, as well as other potential complications that arise from scuba diving.

References