CASE REPORT

Cervicofacial Emphysema
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ABSTRACT
The case describes a young girl developing cervicofacial emphysema after fall. She presented in emergency with gradually worsening upper body swelling without any sign of distress. Swelling was found on the right side of the face, all around the neck and right arm in all these areas. CT scanning of head, neck and chest were performed and a small area of communication between nasopharynx and the trapped air of subcutaneous emphysema was seen. Video-endoscopy of the pharynx showed a tear in the nasopharyngeal mucosa acting as a one way valve leading to the development of cervicofacial emphysema.

Key words: Cervicofacial emphysema. Sub-cutaneous emphysema. Pneumo-mediastinum. Nasopharyngeal tear. Video-endoscopy.

INTRODUCTION
Subcutaneous emphysema in the head and neck region is usually associated with maxillofacial trauma, direct neck trauma, infections, tracheostomy, during dental procedures, cheek biting and radical neck dissection. Cervicofacial emphysema was first described in 1900 in association with dental procedure. It can occasionally occur following tracheal intubation, fiberoptic laryngoscopy or an infectious process in the subcutaneous space. Subcutaneous emphysema occurs when air is introduced into the fascial planes of the connective tissue. The trapped air is often limited to the subcutaneous space in the head and neck. However, it can disperse deeply along the fascial planes of the neck and result in para- and retropharyngeal emphysema, with potential extension into the thorax and mediastinum. These are rare but potentially life-threatening complications.

This report describes an uncommon case of cervicofacial subcutaneous emphysema occurring due to a nasopharyngeal tear.

CASE REPORT
A 19-year-old female presented to emergency department (ED) with history of gradually increasing swelling on the right side of face, around the neck and right arm about 2 days after a fall. She had slipped on wet floor and fell on the ground upon her right side. The head or face had never touched the ground. She was completely fit and enjoying excellent health prior to this happening. She was not in any form of distress, except her concerns regarding worsening body swelling.

During her initial evaluation in the ED, no obvious cause was found. She was referred to pulmonology in-patient and admitted for further work-up. On examination there was swelling and crepitus in the mentioned areas, but no pain or tenderness. Auscultation and X-ray of chest in (PA view) were normal. CT scan of chest and abdomen revealed small pneumomediastinum and subcutaneous emphysema in right arm, neck and face. CT scanning of neck and base of skull was also carried out and it revealed a small area in the nasopharynx (Figure 1), which air communication was seen between subcutaneous emphysema and nasopharyngeal wall.

With ENT consult, her video-endoscopy of the pharynx was planned. Here a small rent was found; small epithelial flap with granulation tissue on the left pharyngeal wall (Figure 2). At that time it was decided by the ENT and

Figure 1: (a) CT scan [base of skull and PNS], (b) CT scan Slice of upper chest (same patients) = showing pockets of small pneumo-mediastinum and upper chest, sub-cutaneous emphysema.

Figure 2: Endoscopic view of nasopharyngeal tear (a) initial (b) after 2 weeks (healing tear).
pulmonology team, to treat her conservatively as the situation was subsiding. At 14th day of admission her swelling totally resolved and repeat endoscopy was carried out which showed completely healed mucosa at the previous site of injury.

DISCUSSION

Subcutaneous emphysema occurs when air is introduced into the fascial planes of the connective tissue through a site of trauma. Mucosal or skin flaps act as one-way valves and probably the negative pressure in the subcutaneous tissue act as the suction force for the air to be sucked in. The trapped air is often limited to the subcutaneous space in the head and neck. However, it can disperse deeply along the fascial planes of the neck and result in para- and retropharyngeal emphysema, with potential extension into the thorax and mediastinum. These are rare but potentially life-threatening complications.

The clinical presentation is characterized by a sudden onset of hemi-facial swelling with the sensation of fullness of the face and closure of the eyelids on the involved side. Crepitation is noted on palpation and is almost pathognomonic for subcutaneous emphysema. In case of associated pneumomediastinum common symptoms are stabbing retro-sternal chest pain, dyspnoea and cough. Other symptoms may include neck pain, dysphagia and sore throat. Life threatening airway obstruction and air embolism can be seen as fatal complications. Middle ear effusions can occur if subcutaneous emphysema affects the eustachian tube or palatal muscles. Pressure effects on the orbit may lead to visual loss. When entry site is unclean, infection of air-filled sites is quite possible. CT is considered the diagnostic standard for diagnosing pneumo-mediastinum and cervico-facial emphysema. CT will show gas outlining mediastinal structures and air streaking in the chest wall or neck. Management of facial subcutaneous emphysema usually involves hospital admission and observation for complications. If facial trauma is the cause, fracture reduction and closure of lacerations are required. Further transmission of air up into the subcutaneous planes can be reduced by eliminating straining and prescribing cough suppressants, stool softeners, analgesics and bed rest. Treatment is conservative, but most experts advocate giving 100% oxygen to increase the rate of gas resorption. Antibiotic prophylaxis may reduce the incidence of mediastinitis and deep neck abscess. In uncomplicated cases, the emphysema will spontaneously resolve over 1-2 weeks.

There are many interesting things in this present case. It is a unique case in a sense that there was no direct trauma to the face or neck area. Moreover the lesion in the nasopharynx was found on the left wall while the emphysema was more on the right side of the face and up to the right arm. Here an indirect trauma created a mucosal flap which acted as a one way valve, allowing the air to enter the facial planes of neck, mediastinum, face and arm; it is a very rare cause of such happening. Another feature was extension of very small amount of air into mediastinum instead of extensive involvement of face and even the arm. Keeping in view all the above facts, this case was very tricky as far as aetiology was concerned. It was also very confusing that why the swelling was restricted to the right side of the face and right arm only, whereas whole of the neck was swollen. The area suspected on CT scan was directly seen with the help of a video-endoscope.

REFERENCES