

Cat got your cheek: A unique cause of extensive cervicofacial subcutaneous emphysema and pneumomediastinum in an 11 year old child

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Introduction

Cervicofacial subcutaneous emphysema and pneumomediastinum may occur as the result of trauma, iatrogenic injury, or infection by gas producing organisms¹.

Valsalva maneuvers, such as sneezing, may force air across tissue planes into the head, neck, chest, and abdomen^{1,3}.

Small amounts of subcutaneous free air may be non-problematic, while large amounts may lead to airway or cardiopulmonary compromise³.

We present the case of a child with substantial cervicofacial subcutaneous emphysema and pneumomediastinum following a minor cat scratch injury to the cheek.

Case Presentation

An 11-year-old male suffered multiple superficial cat scratches to the neck and face from a family cat. Only one intraoral puncture wound violated the mucosa. The child recalled the cat did scratch the inside his mouth.

Several hours after the injury, the parents noticed edema of the right side of the face and the right eye was swollen closed. Palpable crepitus was felt on the right cheek, prompting parents to take him to the Emergency Department.

CT imaging was obtained showing extensive subcutaneous emphysema extending from the mediastinum to the orbit and skull base. There was no evidence of wound infection. No fractures of the trachea, larynx or facial skeleton were seen. Flexible fiberoptic laryngoscopy showed no signs of trauma to the upper airway. The patient did not recall blowing the nose, coughing forcefully, straining, or lifting after the incident.

The child was observed in an inpatient setting for several days. Vital signs were closely monitored and remained stable. Tetanus booster and prophylactic antibiotics were provided. The subcutaneous emphysema improved clinically over the course of several days and he was discharged home in stable condition on oral antibiotics.

There have been no signs or symptoms to suggest development of Cat Scratch disease.



Figure 1. Axial CT scan showing extensive subcutaneous free air in the right cheek

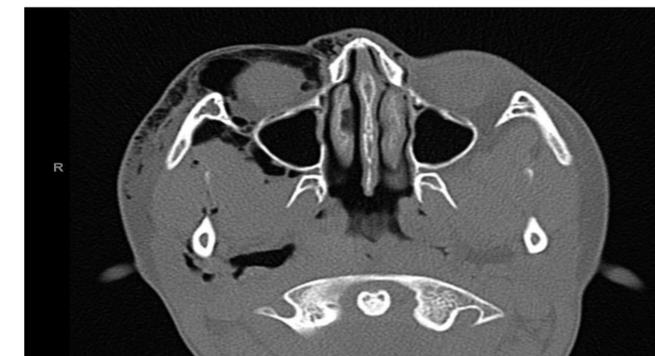


Figure 2. Axial CT scan showing subcutaneous free air in the right periorbital temporal and parapharyngeal spaces.

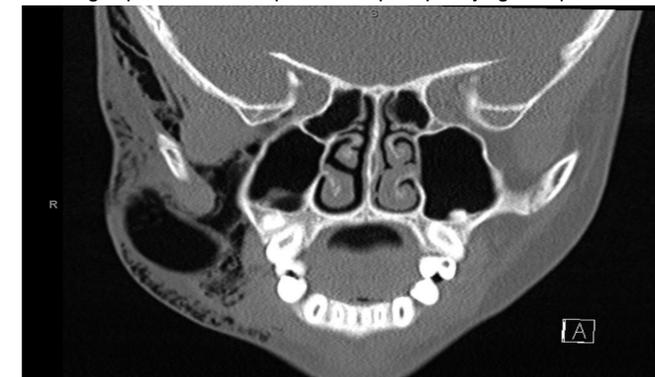


Figure 3. Coronal CT scan showing subcutaneous free air in the right temporal, parapharyngeal and buccal spaces.



Figure 4. Axial CT scan showing free air in the anterior chest wall and mediastinum.

Discussion

Traumatic subcutaneous emphysema may result from fractures of the facial skeleton or injuries of the upper aerodigestive tract^{1,2,3}. Injuries that violate the mucosa, such as penetrating oral cavity or oropharyngeal trauma, are additional causes. Dental procedures have caused subcutaneous emphysema².

Free air may travel across fascial spaces in the head and neck, and down into the mediastinum causing pneumopericardium or tension pneumothorax, which may cause cardiopulmonary compromise. Hamman's sign, a crunching sound auscultated over the left lateral chest wall in concordance with the heartbeat, can be a clinical sign of pneumomediastinum or pneumopericardium¹. This was absent in our patient.

Inpatient hospital observation is warranted when there is significant subcutaneous emphysema in order to monitor for the more serious potential complications^{1,2,3}. Tetanus prophylaxis is indicated, as is antibiotic coverage against oral cavity pathogens.

Specific to this patient's injury secondary to a cat scratch, observation for signs or symptoms of Bartonella Henselae infection is recommended. Symptoms include edema and erythema at the injury site, fever, and persistent adenopathy⁴.

Conclusion

This rare cause of subcutaneous emphysema highlights several principles of management.

In the absence of wound infection or cardiopulmonary symptoms, short duration inpatient observation along with prophylactic antibiotic therapy to cover oral flora is sufficient treatment. In the case of cat bite or scratch injuries such as this one, subsequent development of Bartonella Henselae infection may occur.

The Otolaryngologist must be aware of the possibility for minor injuries to the face or neck to cause significant subcutaneous emphysema, and the potentially life-threatening sequelae that may result. Early identification and close observation are imperative to prevent serious complications.

References

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