Thyroid rupture secondary to blunt neck trauma☆☆

Abstract

Rupture of the thyroid gland is uncommon in cases of blunt neck trauma. We report a case of thyroid rupture after a motor vehicle accident in a patient without a preexisting goiter. He presented with a painful anterior neck swelling associated with dysphagia and hoarseness of voice. Computed tomographic scans showed lacerations of the right thyroid lobe and isthmus with features suggestive of slow active bleeding. Neck exploration was subsequently performed, and a ruptured right thyroid lobe was found with ongoing venous hemorrhage. A right hemithyroidectomy was performed, and the patient recovered without complications.

Neck trauma is a challenging emergency where many vital structures such as the larynx, trachea, pharynx, esophagus, and the major vessels are at risk. Although most neck traumas are penetrating injuries, blunt trauma to the neck is not uncommon. However, thyroid rupture secondary to blunt neck trauma is rare. We report a case of thyroid rupture after blunt neck trauma sustained during a motor vehicle accident in a patient without a preexisting goiter.

A 41-year-old motorcyclist was involved in a motor vehicle accident where his neck impacted against the handlebars of his motorcycle. He presented with a painful anterior neck swelling associated with dysphagia and hoarseness of voice. There was no prior history of goiter. On arrival in the emergency department, his vital signs were stable with no respiratory distress. Clinical examination showed an erythematous diffuse anterior neck swelling, predominantly on the right, which was tender, firm, nonfluctuant, and nonpulsatile (Fig. 1). Skin abrasions were noted over the neck and upper anterior chest wall. He had no stridor, and the carotid pulses were normal.

Computed tomographic (CT) scans showed lacerations of the right thyroid lobe and isthmus with features suggestive of slow hemorrhage (Figs. 2-4). There were also associated fractures of the thyroid cartilage, mandible, and both first ribs. A thyroid function test showed slightly elevated free thyroxine with normal triiodothyronine and thyrotropin levels.

In view of the patient’s condition and findings of active bleeding on the CT scans, the decision was made to proceed with neck exploration. Intraoperatively, the right lobe of the thyroid gland was found to be ruptured with multiple lacerations and ongoing venous hemorrhage (Figs. 5 and 6). A right hemithyroidectomy was subsequently performed, and the patient recovered without complications. Histopathologic examination of the right thyroid lobe revealed the incidental finding of lymphocytic thyroiditis.

Thyroid injury secondary to blunt neck trauma is uncommon, and most occur in patients with preexisting goiters [1,2]. Only a few isolated cases of thyroid rupture after blunt neck trauma have been reported in patients with normal thyroid glands [3-7]. Common causes of thyroid injury include motor vehicle accidents and falls, although spontaneous thyroid hemorrhage have been reported following muscular effort from heavy lifting [2-4,8-14].

Symptoms of thyroid injury after blunt neck trauma include neck swelling, neck pain, respiratory distress, dysphagia, and hoarseness of voice. Patients may be stable during the initial presentation, but life-threatening symptoms may develop later. Previous reported cases revealed that patients may present with severe dyspnea 24 hours after the onset of injury [2,8]. Intubation may not be required in all cases, but close observation is necessary as life-threatening airway compression may occur later secondary to progressive hematoma or soft tissue edema.

Computed tomographic scans are an important investigative tool in establishing the diagnosis as it can delineate the thyroid injury and extent of hematoma as well as assess the larynx and upper digestive tract. Any preexisting thyroid pathology in the noninjured thyroid tissue may also be ascertained. Ultrasound scans are also useful, especially bedside scans when the patient is unstable but CT scans have been shown to be superior [3,4]. Fiberoptic laryngoscopy is also helpful in evaluating laryngotracheal injury. Computed tomographic angiography may be indicated when major vascular injury is suspected.

Fig. 1. Anterior neck swelling, more obvious on the right side.
Slight temporary derangement of the thyroid hormones was noted in this case. A similar finding has been noted in previous cases of thyroid injury, and thyroxine levels usually normalize after a period \([4,5,15]\). This could have been due to the sudden release of thyroxine caused by trauma to the thyroid gland. Thyroid storm induced by blunt thyroid gland trauma has also been reported, but it is very rare \([16]\).

Cases of thyroid rupture have previously been treated either conservatively or surgically. In our patient, the decision for surgical intervention was based on the report of active bleeding on the CT scans and the likelihood of the neck hematoma progressing. Intraoperatively, the ongoing venous hemorrhage due to thyroid rupture was confirmed, and a right hemithyroidectomy was subsequently performed. The finding of lymphocytic thyroiditis was made incidentally during histopathologic examination of the resected thyroid lobe, and this may have predisposed the thyroid gland to injury. Conservative management may be considered when no active hemorrhage is present or when the hematoma is not progressing \([3-6,9,11,12,14]\). In cases managed conservatively, close observation in the intensive care unit and serial ultrasound scans may be required.

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