

The hyoid syndrome: a pain in the neck

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Abstract

This paper reports on 13 patients with a pain syndrome arising from the region of the greater cornu of the hyoid bone. It is often missed and yet is readily treatable. The syndrome causes pain on swallowing in the region of the hyoid which may radiate to the ear, face and lower jaw or may be felt also in the pharynx. Treatment by an injection of a mixture of depomedrone and one per cent lignocaine is very effective.

The underlying pathology is discussed and it is suggested that in some cases the pain and discomfort experienced by patients may be due to tenosynovitis of the intermediate tendon of the digastric muscle. Greater recognition of this relatively common condition would not only result in more effective treatment but would also avoid unnecessary investigation and surgery.

Key words: Neck; Pain; Hyoid bone; Tenosynovitis

Introduction

This paper reports on a number of patients with a pain syndrome arising from the region of the greater cornu of the hyoid bone. The syndrome causes pain on swallowing in the region of the hyoid which may radiate to the ear, face and lower jaw or may be felt also in the pharynx. Greater recognition of this relatively common condition would not only result in more effective treatment but would also avoid unnecessary investigation and surgery. The term hyoid syndrome has been used by Kopstein (1975) to incorporate the various possible pain syndromes relating to the hyoid bone and to differentiate these from the styloid syndrome that has been previously well reported (Eagle, 1937; 1962).

Patients and methods

Thirteen patients presenting with similar symptoms and signs, suggestive of the hyoid syndrome were seen over a three-year period. Their ages ranged from 30–77 years and there were five males and eight females.

History

The main presenting symptom in each case was lower facial and upper neck pain radiating to a variety of areas including the ear, mandible, mandibular molar teeth, temporomandibular joint, neck and throat. When asked to point to the area of maximum discomfort all the patients indicated an area overlying the hyoid bone (Figure 1). In every case the onset had been gradual. In nearly every case (11/13) the pain was made worse by swallowing and many patients described a sensation of a pharyngeal foreign body. No precipitating causes nor trigger factors were

identified. All the cases were unilateral in nature with seven patients having symptoms on the left and six on the right side. The symptoms had been present for between three months and four years at the time of presentation. There were no other relevant medical illnesses and in particular no associated rheumatological features.

Many patients had previously undergone extensive investigation and treatment. Three patients had been investigated with CT scans, five had a barium swallow, three had temporomandibular joint X-rays and two patients had sinus X-rays. Most patients had received courses of antibiotics, two patients had undergone extraction of lower molar teeth and a further patient an apicectomy with no benefit. Another patient had undergone two nasal procedures, including submucous resection and



Fig. 1

Point of maximum discomfort in the hyoid syndrome.

subsequent antral washouts with no improvement in his atypical facial pain: one patient had undergone tonsillectomy for the symptoms and a further patient had undergone removal of a submandibular gland.

Examination

In all cases examination of the neck revealed tenderness overlying the greater cornu of the hyoid bone on the affected side. Eliciting this sign necessitates bimanual palpation, using one hand to push on the contralateral side of the neck and so presenting the greater cornu of the hyoid bone to the palpating hand. Palpation of this area reproduced the patients' symptoms. The specific point of tenderness appeared to be at the middle of the greater cornu but in some patients it was not possible to determine whether it was more towards the lesser cornu or the tip of the greater cornu. In some patients rotation of the head towards the affected side exacerbated the symptoms, as did resistance to this movement. Resistance to jaw opening elicited discomfort in some patients. No elongation of the styloid process was found in any of the patients. Examination of the rest of the head and neck was unremarkable except for evidence of recent surgical forays in some. Lateral soft tissue X-rays of the neck were not obtained in all patients, but in six patients were normal with no evidence of styloid enlargement. Four patients who had very marked unilateral pain on swallowing and otalgia, despite classical signs of hyoid syndrome, were further investigated with barium swallows and direct pharyngoscopy under a general anaesthetic; all the findings were normal.

Treatment

Following a careful history, examination and further investigation where appropriate, a diagnosis of hyoid syndrome was made. The patients were counselled about the condition and offered treatment with an injection of a mixture of steroids and local anaesthetic.

Depomedrone (1 ml) (40 mg/ml methylprednisolone acetate) is mixed with 1 ml of one per cent lignocaine hydrochloride in a syringe. The area of maximum tenderness is re-identified and the hyoid bone is then stabilized by pushing on the contralateral greater cornu in order to present the greater cornu and the tissues overlying it on the affected side. The skin overlying this area is then cleaned. Using a 25 gauge (orange) needle between 0.5 and 0.75 ml of the depomedrone/lignocaine mixture is infiltrated into the area of maximum tenderness, just overlying the middle of the greater cornu of the hyoid bone. The bone can be felt with the tip of the needle which should then be withdrawn a fraction to allow comfortable infiltration. Care should be taken to avoid intravenous injection and to avoid spillage of depomedrone into the dermis where it can cause disintegration of the cellular elements and physiochemical changes in the ground substance of the connective tissue resulting in depressions in the skin and depigmentation. Likewise care should be taken to avoid exceeding the recommended dose of 0.75 ml because even a single dose of depomedrone has been shown to cause a reduction in the plasma cortisol levels and there is evidence of hypothalamus-pituitary-adrenal axis suppression lasting for up to four weeks. The amount

and duration of the suppression is proportional to the amount of methylprednisolone injected and for this reason this treatment should not be offered to patients who have contra-indications to receiving steroids. (manufacturer's warning: ABPI Data Sheet Compendium, 1993–94).

Immediately after the injection the symptoms resolve but it is quite usual for the patients to experience an increase in symptoms for a few days before complete resolution.

Results

Four patients initially deferred treatment and were reviewed at three months. One patient had improved spontaneously but the other three had persisting symptoms. Twelve patients were treated by injection of depomedrone and one per cent lignocaine. Six patients had resolution of their symptoms after a single injection, three required a second injection and three required a third injection before resolution occurred. All patients were followed up for a minimum of three months. No side effects occurred with the treatment.

Discussion

The diagnosis of the hyoid syndrome is made by excluding any other local pathology and by demonstrating the specific finding of tenderness over the hyoid bone. The condition mimics many other conditions of the head and neck but can be differentiated by a careful history and in particular a careful palpation of the hyoid bone. The symptoms may initially be suggestive of either trigeminal or glossopharyngeal neuralgia but can be differentiated by the constancy of the pain and the absence of any trigger factors. Chronic disease affecting the upper aerodigestive tract must be excluded, by endoscopy and radiological studies if necessary.

The manifestations of the styloid (Eagle) syndrome closely resemble the symptoms found in the above group of patients: piercing pain laterally in the pharynx spreading to the ear, sensation of a foreign body on dry swallowing, difficulties swallowing and a feeling of pressure in the neck (Eagle, 1937; 1962). However, in the styloid syndrome the symptoms usually start at some latent period after tonsillectomy and there is clinical evidence of tenderness over an elongated styloid process. The treatment is usually to recommend removal of the elongated styloid process.

A pain syndrome relating to the hyoid bone has been known about for nearly 40 years (Brown, 1954) but is not well recognized. The initial report documented tenderness over the greater cornu of the hyoid bone but did not offer any suggestions as to aetiology or treatment. Steinmann (1968) reported a series of patients commenting on the similarity to the styloid syndrome but recording the absence of an elongated styloid process and documenting tenderness over the tip of the greater cornu of the hyoid bone.

A further syndrome relating to the hyoid bone, the stylohyoid syndrome, was reported by Sheno (1972) with a specific finding of tenderness over the lesser cornu of the hyoid bone but very similar symptoms. Kopstein (1975) has suggested that the various syndromes relating to the hyoid bone should be regarded as subdivisions of a hyoid

syndrome. Indeed, in our experience it is not always easy to be absolutely specific about which point of the hyoid represents the most tender point and we would therefore agree that the whole group should be termed the hyoid syndrome and differentiated from the better known styloid syndrome.

It seems likely that various factors may be involved in the aetiology of this pain syndrome. The hyoid bone is a very mobile structure, especially during speech and deglutition (Steinmann, 1968). Steinmann suggested that the mobility of the hyoid bone resulted in excess strain on the ligamentous and muscular attachments with possible insertion tendinosis occurring as a result. Shenoi (1972) proposed that degeneration of the fibres of the stylohyoid ligament might occur at its insertion into the lesser cornu. Ernest and Salter (1991) have shown histological evidence of degeneration of the fibres of the middle pharyngeal constrictor at its insertion into the greater cornu of the hyoid bone in a patient with typical symptoms who had undergone resection of the greater cornu as treatment. The patient had received previous injections of steroids into the region which might have caused some similar degeneration.

One structure closely related to the hyoid bone that has not received more than cursory mention is the intermediate tendon of the digastric muscle (Figure 2). This perforates the stylohyoid and is bound to the side of the body and greater cornu of the hyoid bone by a fascial sling which is sometimes lined by a synovial sheath. The anterior belly of the digastric muscle is derived from the first branchial arch and receives its motor and sensory supply from the trigeminal nerve. The motor supply to the posterior belly, derived from the second branchial arch, is from a branch of the facial nerve (Gray's Anatomy, 1989). The motorneurons are located in the accessory motor nucleus of the trigeminal and facial nerve respectively (Rokx *et al.*, 1985). The two bellies contract synchronously during jaw opening, but on swallowing asynchronous firing of the anterior and posterior fibres can occur (Widmalm *et al.*, 1988). The peripheral facial nerve is purely motor and it has been suggested that the proprioceptive sensory supply to muscles it supplies is from the Vth cranial nerve (Pearson, 1949). However, whilst proprioceptive muscle spindles have been found in the anterior belly of the digastric muscle by a number of workers (Lennartsson, 1980), there has been only one

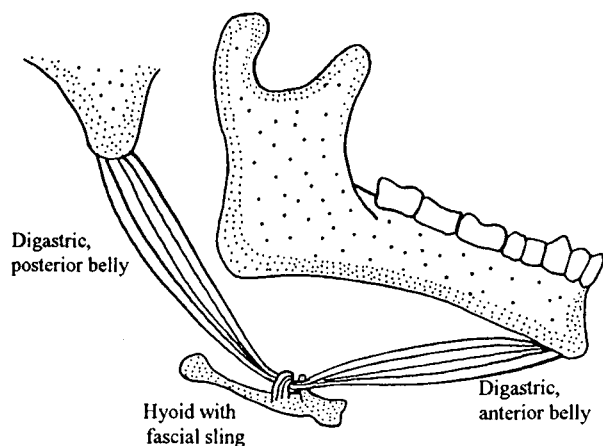


FIG. 2

Anatomy of the digastric muscle and intermediate tendon.

report of a spindle in the posterior belly (Bossy, 1958). The sensory supply, if any, to the posterior belly and intermediate tendon thus remains uncertain.

The lesser cornu and upper part of the body of the hyoid develop from the second branchial arch whilst the greater cornu and lower part of the body develop from the third arch (Langman and Sadler, 1985). As the fascia which binds down the intermediate tendon originates from the junction of the body and greater cornu it is likely that the sensory supply to the sling, synovial sheath and adjacent hyoid periosteum is the nerve of the third arch, the glossopharyngeal nerve. It is a feature of painful stimuli affecting the glossopharyngeal nerve that pain radiates to the ear on the affected side (Howard, 1987). This is consistent with the clinical finding of pain radiating to the ear in some of the cases reported here.

The intermediate tendon of the digastric has been shown to be the pivot around which the hyoid bone moves and therefore it would be subjected to quite considerable mechanical strains (Steinmann, 1968).

Tenosynovitis secondary to overuse of other tendons with synovial sheaths is a common rheumatological complaint. The clinical features of tenosynovitis are pain on palpation, pain on passive tension and pain on resisted muscular contraction (Rodineau, 1991). The condition usually responds to local corticosteroid injection (Neustadt, 1991). It therefore seems likely that inflammation of the intermediate tendon of the digastric muscle or its synovial sheath would result in very similar findings to those in the above patients and it should be considered as a possible aetiology of the hyoid syndrome.

A number of different treatment methods have been tried for the hyoid syndrome with varying degrees of success. Good results have been reported with local infiltration of steroids alone (Shenoi, 1972) and in conjunction with a local anaesthetic agent (Steinmann, 1968). Other treatments have been aimed at local symptomatic relief by using physiotherapy, heat application and ultrasound. A technique for excising the tip of the greater cornu of the hyoid bone has been described with good results (Kopstein, 1975). In our series local infiltration of a mixture of depomedrone and one per cent lignocaine was very effective at abolishing the pain.

Greater awareness of the pain syndromes related to the hyoid bone would save patients from undergoing unnecessary investigations and inappropriate operations. Careful history taking and a thorough examination which elicits the cardinal sign of tenderness over the hyoid bone allows the diagnosis to be made with certainty.

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