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Unusual Morphology of the Xiphoid Process Leading to Epigastric Pain: A Case Report

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Abstract

We present the case of a 34-year-old male patient who presented to our clinic with chronic epigastric pain and chest discomfort. On examination, a ventrally curved xiphoid process was identified as the probable cause of the pain. Radiological investigations were performed to confirm the diagnosis, and the patient was managed conservatively with pain medications and lifestyle modifications. After three months of follow up, the patient demonstrated significant symptom improvement, indicating notable progress in their physiological state and overall well-being.

Introduction

The xiphoid process is a small cartilaginous extension of the lower sternum that serves as the attachment site for several abdominal muscles. While it is a relatively insignificant anatomical structure, variations in its shape and size can lead to a range of symptoms, including pain, chest discomfort, and difficulty breathing.**[**1, 2**]** Ventral curvature of the xiphoid process is a rare but recognized cause of epigastric pain, and it is often misdiagnosed as other gastrointestinal or cardiac conditions.**[**3**]** Despite being a well-known entity, there is very little literature about this peculiar xiphoid process anatomical variation.**[**1, 3, 4**]** Herein, we report a case of ventral xiphoid process curvature causing chronic epigastric pain and chest discomfort.

Case Report

A 50-year-old male patient presented to our clinic with complaints of chronic epigastric pain that had been present for past several months. He reported that the pain was intermittent but sometimes it was severe enough to affect his quality of life. The pain was described as a dull ache in epigastric area that radiated to the back, and was not associated with any particular food. He had no significant medical history, he was non-alcoholic and was not taking any medications.

On examination, the patient was hemodynamically stable with normal vital signs. There was no evidence of abdominal distension or tenderness. However, on palpation of the epigastric region, a bony prominence was felt that was tender on pressure. Further examination revealed a ventral curvature of the xiphoid process, which was suspected to be the cause of the pain.

To confirm the diagnosis, radiological investigations were performed. X-ray imaging of the chest revealed a prominent ventral curvature of the xiphoid process (Figure 1).

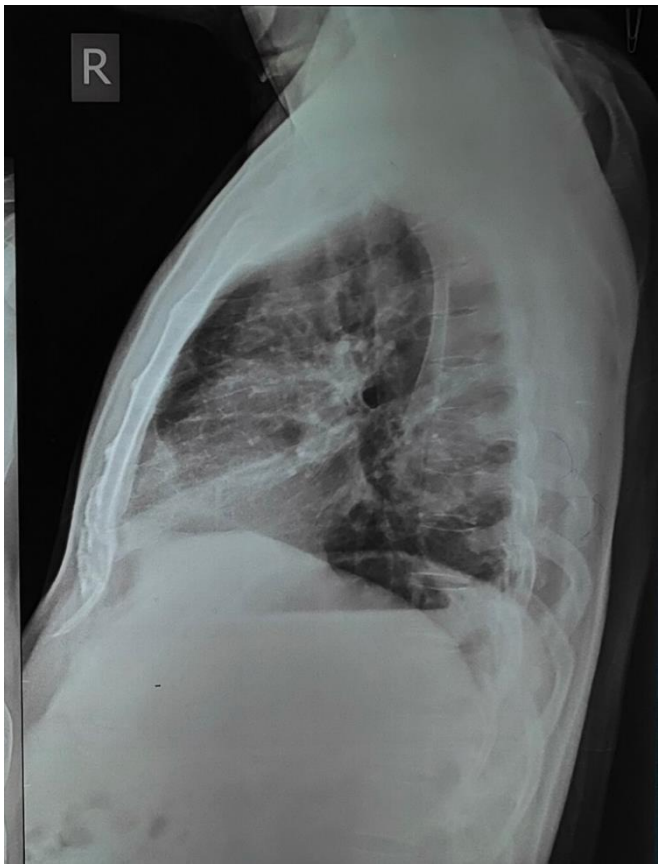

Figure 1: X-ray chest lateral view showing large elongated ventrally curved xiphoid process

A computed tomography (CT) scan of the chest, abdomen and pelvis showed a similar finding, with no evidence of any other abdominal pathology. (figure 2)

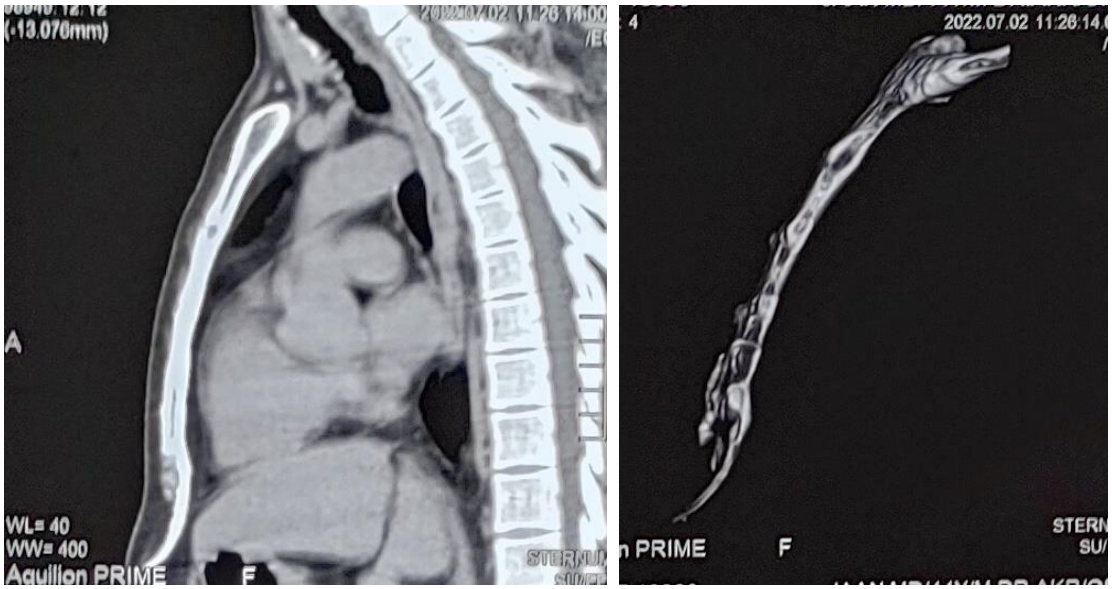

Figure 2: CT scan sagittal section and 3D image showing ventally curved xiphoid process

To rule out gastric causes of the pain oesophago-gastro-duodenoscopy was done which showed mild hyperaemia in antral region with rest of the stomach, oesophagus and duodenum normal (figure 3)

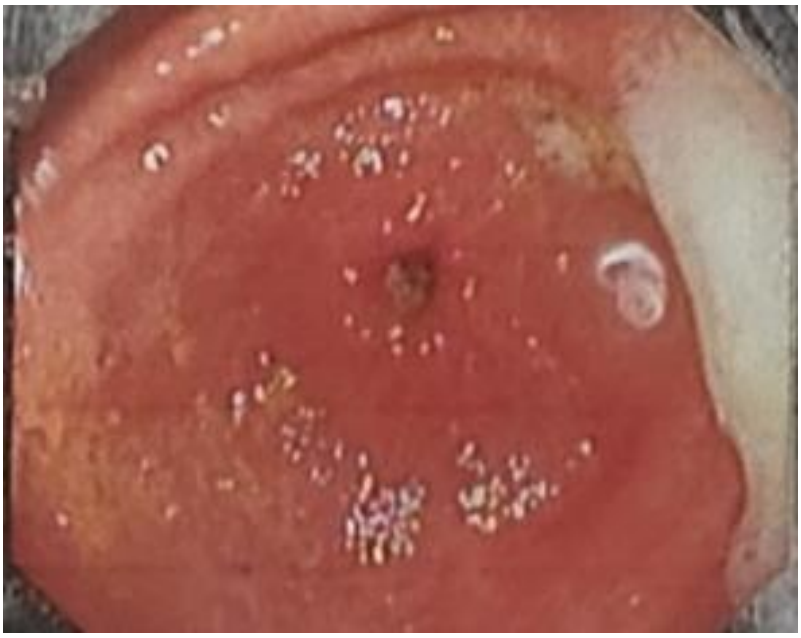

Figure 3: Endoscopy image of the gastric antrum area showing hyperemia

The patient was managed conservatively with pain medications and lifestyle modifications, including avoidance of activities that aggravated the pain. Follow-up visits were scheduled at one month and three months after the initial consultation. At the one-month follow-up, the patient reported a reduction in pain severity and frequency. On repeat examination, the ventral curvature of the xiphoid process was still present, but was non tender. At the three-month follow-up, the patient reported significant improvement in his symptoms, with minimal pain and no interference in daily activities.

Discussion

Ventral curvature of the xiphoid process is a rare but recognized cause of epigastric pain.[3] It can occur as a congenital variation or as a result of trauma or degenerative changes. The condition is often mimic as other gastrointestinal or cardiac conditions, leading to unnecessary investigations and treatments.[5, 6] The diagnosis can be made clinically with palpation of the epigastric region and confirmed with radiological investigations.

Xie et al in their study of cadaveric dissection and radiological study described morphological diversity in the xiphoid process.[7] In another anatomical evaluation study of xiphoid process Akin et al found ventrally curved xiphoid process tip resembling hook in 2.2% of the patients. Ugurlar et al reported association of occupation with the xiphoid syndrome through a case report of a carpenter with a history of repeated microtraumas due to placement of wood against his anterior chest wall.[8]

Skinner reported two cases of xiphoid horn in pectus excavatum patient, in one case the xiphoidal horn was removed along with pectus excavatum repair.[9] Howell in his study reported three cases of xiphodynia, all of them were managed conservatively with local steroid injections and medications.[2] In most cases, surgical excision is not necessary unless the patient has tack hammer xiphoid.[3] In a recent study of five cases with xiphodynia, Boekel et al. suggested surgically removing the xiphoid process as a treatment.[4] Treatment options for Xiphoid process syndrome with a ventrally curled xiphoid presenting with an epigastric mass include block treatment, acupuncture, and, if necessary, surgical therapy.[10]

Conservative management with pain medications and lifestyle modifications is usually effective in relieving symptoms. Surgical intervention is rarely required, and is reserved for cases in which conservative management fails or there is evidence of significant deformity or compression of adjacent structures.[1–3, 6]

Conclusion

Ventrally curved xiphoid process is an uncommon cause of musculoskeletal chest and epigastric pain. Reproduction of pain with gentle xiphoid process palpation serves as a clue to the diagnosis. This disorder's symptoms may mimic myocardial ischemia and other gastrointestinal symptoms and therapy involves local injections of steroid, medications, anaesthesia blocks and if required surgical excision.

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