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Diaphragmatic eventration case report: a possible sequelae of past tuberculosis infection.

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Abstract

Diaphragm eventration, an abnormal elevation of the dome of the diaphragm, could be congenital or acquired. Acquired cases usually occur after an episode of trauma to the phrenic nerve, or may be attributed to infectious and inflammatory causes. We report an acquired eventration with a probable association with tuberculosis infection.

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Abstract

Diaphragmatic eventration, an abnormal elevation of the dome of the diaphragm, could be congenital or acquired. Acquired cases usually occur after an episode of trauma to the phrenic nerve, or maybe attributed to infectious and inflammatory causes. We report an acquired eventration with a probable association with tuberculosis infection.

key clinical message:

A multifaceted analysis, detailed examination, and investigations are needed to judge whether a conservative approach alone or definitive surgical intervention is suitable for the patient with elevated diaphragm.

Keywords: case report; diaphragmatic eventration; tuberculosis.

Introduction

Diaphragmatic eventration is a rare entity in which there is the permanent elevation of the hemidiaphragm without an obvious diaphragmatic defect.[1] In some cases, it is difficult to distinguish this entity from diaphragmatic hernia, but in the latter, there is disruption of the musculature of the diaphragm. In contrast to eventration, where the musculature is only weakened and thinned out with no breach in its continuity.[2] The condition can be congenital or acquired.[3]. Acquired cases occur most commonly after traumatic damage to the phrenic nerve[1]. Depending on the severity, cases can be symptomatic or asymptomatic. When symptomatic, the spectrum of presentation is diverse ranging from respiratory complaints of cough, dyspnoea, and recurrent chest infections to gastrointestinal symptoms of epigastric discomfort, heartburn, bloating, belching, and abdominal fullness[3]. Here, we report a case of a 72 years old woman with right-sided eventration and a remote history of tuberculosis infection.

Case presentation

A 72 years old lady presented to the outpatient department with a history of on and off epigastric discomfort, burping, and water brash for one year. She also complained of occasional dyspnoea after food intake, not severe enough to restrict daily activities. She was being managed in the line of acid peptic disorder. She gave no history of cough, orthopnoea, tachypnoea, chest pain. She denied any history of previous surgery

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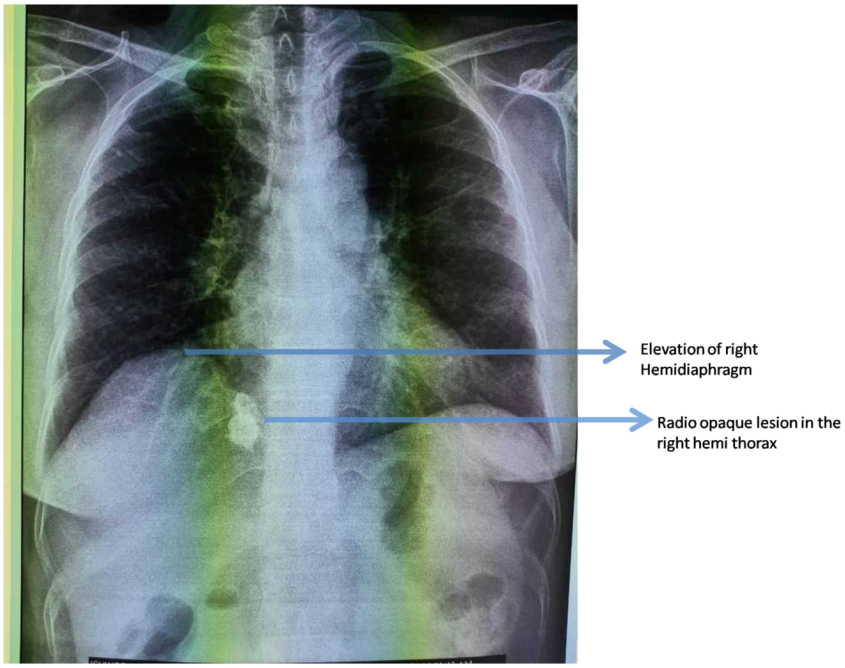
or trauma. However, she had a past history of Tuberculosis infection 25 years back, for which she had received antitubercular medications. She does not consume alcohol but has been smoking for 25 years with a pack-year of 6.25.

Her general physical examination was normal with stable vital signs. On chest examination, there was decreased movement on the right side inframammary area. Tactile vocal fremitus and breath sounds were also reduced on the right side. Respiratory rate was normal with no signs of respiratory distress.

Routine investigations showed no abnormalities. X-ray of the chest revealed a focal upward bulge in the contour of the right hemidiaphragm at the medial aspect, with no herniation of abdominal content into the right hemithorax. (Figure 1) Also, a lobulated radiopaque lesion was noted in the medial aspect of the lower lung zone, the caudal aspect of which was extending below the right diaphragmatic dome. The lesion was likely a calcified granulomatous lesion. Plain CT of the chest (Mediastinal Window) in coronal (Figure 2) and sagittal planes(Figure 3) showed focal thinning of the right hemidiaphragm in the anterior aspect without obvious diaphragmatic defect. The adjacent right lobe of the liver appeared to bulge into the thinned portion. Based on the radiological findings, diagnosis of eventration of right hemidiaphragm was made.

The case was thoroughly assessed and evaluated by a team of experts at our center and with no immediate need for surgical intervention; she was managed conservatively and reviewed on regular follow-up visits. A physiotherapy consultation was done. Counseling for smoking cessation was also done.



On a 3 month follow-up, the patient was clinically stable, and repeat radiographic films showed no progression of the disease condition. (Figure 4 and Figure 5)

Figure 1: Chest Xay PA view showing elevation of right hemidiaphragm and a radio opaque leison noted on right hemithorax

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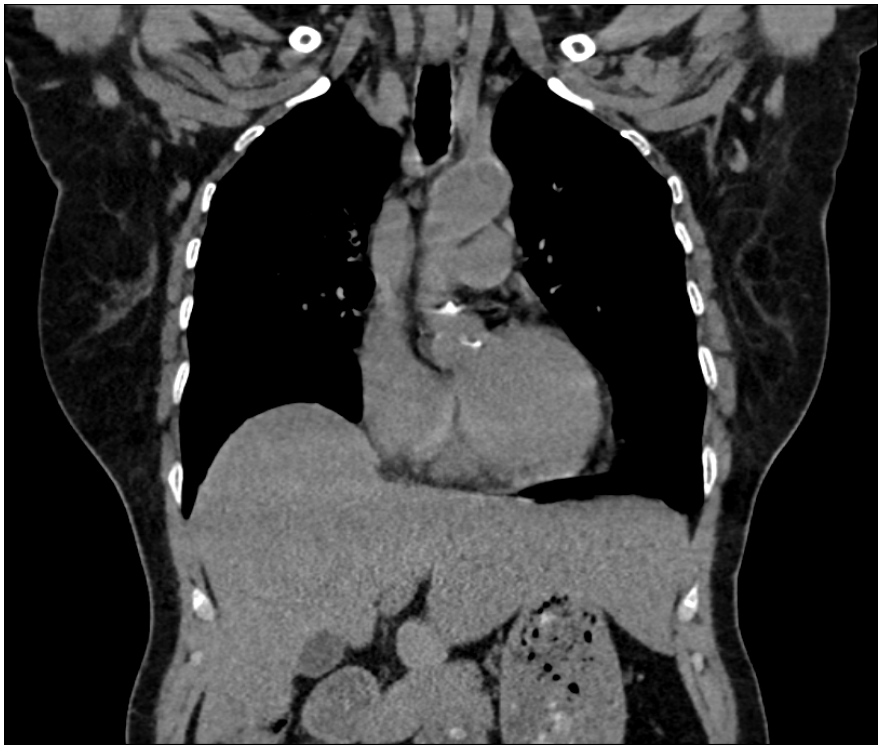

Figure 2: Plain CT of chest Mediastinal window in Coronal plane

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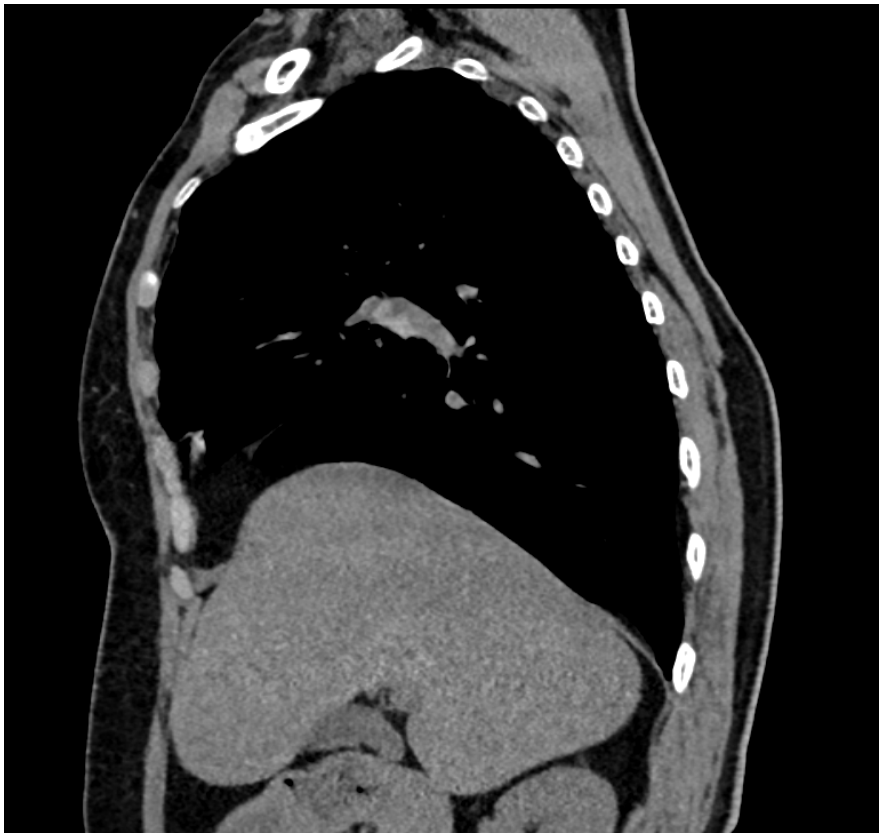

Figure 3 : Plain CT of chest mediastinal window in sagittal plane

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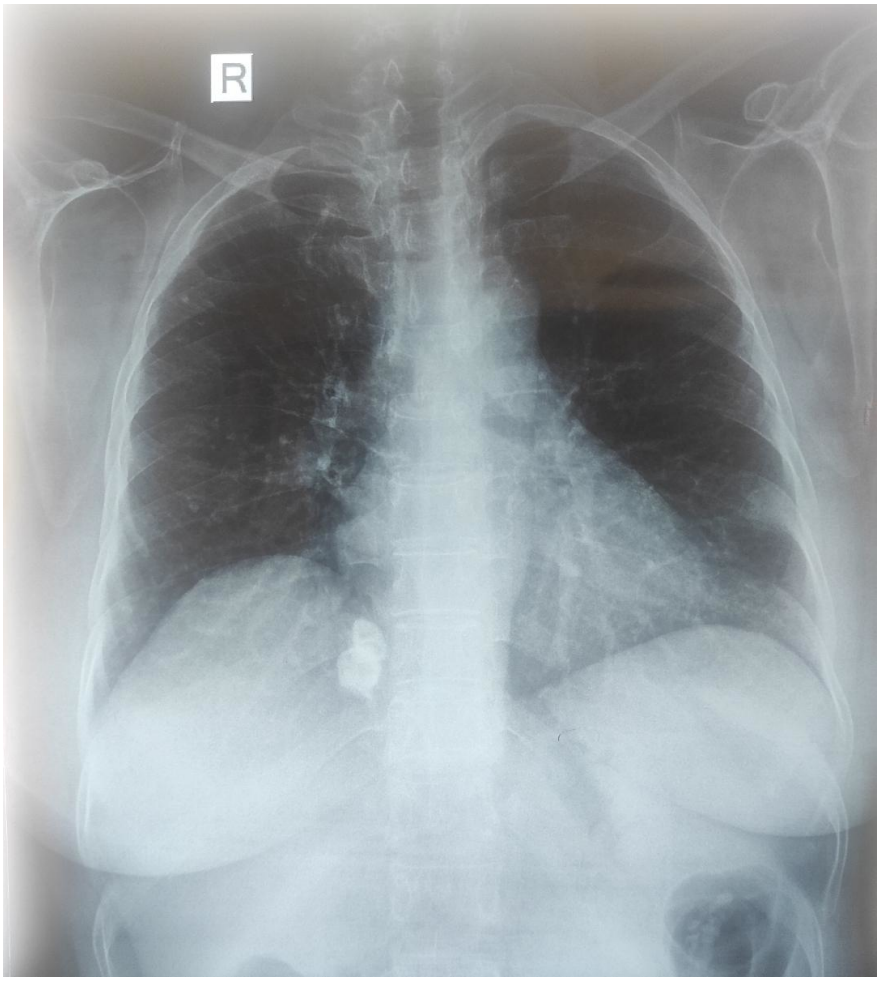

Figure 4 Repeat Chest xray PA view taken on follow up visit. No progression of the disease condition.

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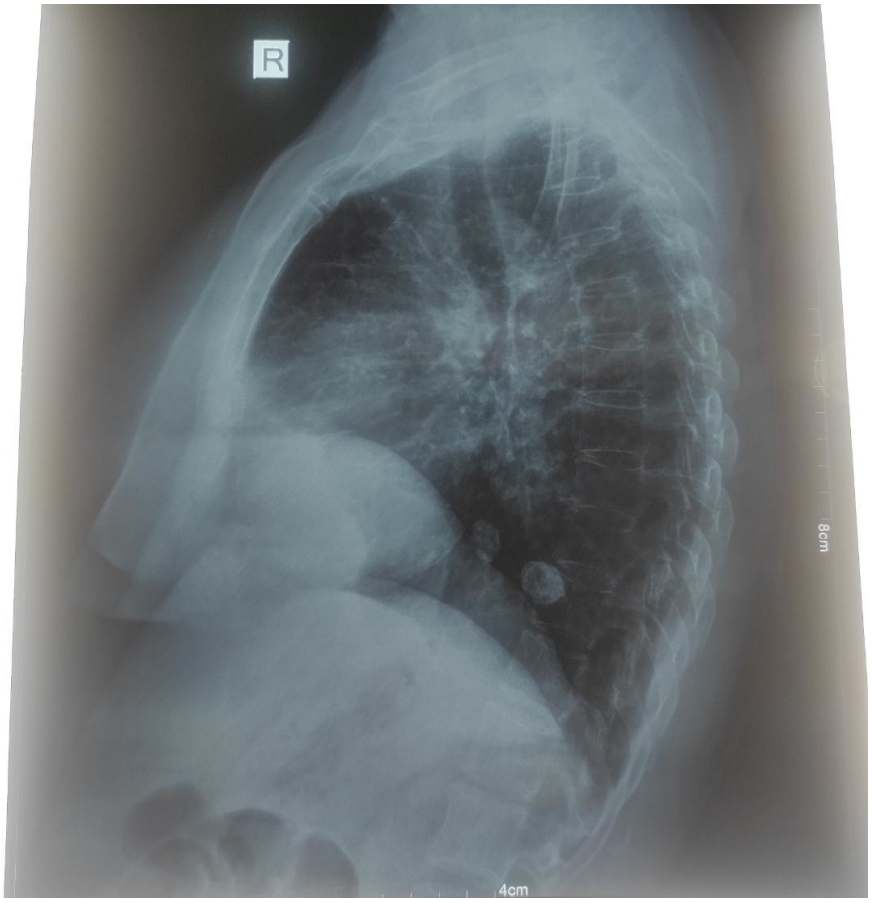

Figure 5 : Repeat chest Xray lateral view on a follow up visit

Discussion

Eventration of diaphragm is a relatively rare entity. Depending on the severity, the condition can range from asymptomatic incidentally diagnosed ones to severe dyspnoea[4]. Severe respiratory distress, recurrent infections, and lack of response to conservative management warrant a need for surgical intervention.[3]

It is more common in males, more on the left diaphragm. [5][6] [7][8]. The condition can be congenital or acquired but not much symptomatic distinction exists between the two. Congenital causes are due to abnormalities in the development of the muscular portion of the diaphragm[7], whereas acquired cases most commonly occur due to traumatic phrenic nerve damage, but can also be attributed to infectious, inflammatory, or idiopathic causes[4]. Congenital cases occur in association with congenital syndromes and developmental anomalies[7], which was not seen in our case. Neither was there a history of recurrent chest infections in childhood as seen in congenital eventration[9]. It is also rare that congenital cases present in adulthood [6], making our case likely to be an acquired one.

Our patient denies past history of trauma or any cardiac, thoracic, and pulmonary surgeries in the past. Ruling out all other possibilities, a high index of suspicion of an infectious etiology was made in our case as the patient gave a history of Tuberculous infection 25 years back, and there were also multiple calcified lesions in the hemithorax as seen on present CT imaging. The presence of calcified lesions in the vicinity of the phrenic nerve might have led to diaphragmatic paralysis.

Similar cases of eventration in tuberculous patients have been reported and a possible association with Tu-

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berculosis has been reported earlier[10]. Even a successful tuberculosis treatment in terms of bacteriological clearance or completion of drug doses does not guarantee a halt in the progression of structural and functional organ changes in the long haul.[11] Residual radiological sequelae, lung function impairment, and other long-term complications like airway stenosis, lung scarring, fistulae formation in successfully treated Tb cases have also been seen[12] [13] A case of diaphragmatic eventration in association with enteric fever has been previously reported in Nepal.[10] Apart from these, association with mumps [10], polio, influenza, diphtheria, have also been mentioned in literature[14]

Imaging modalities play a chief role in the diagnosis. Management, depending on the severity of the case, can be done conservatively with supportive care and periodic follow-up visits in asymptomatics and those with mild symptoms, whereas a definitive surgical intervention is required in those with severe and persistent respiratory distress.[5]

Diaphragmatic plication, which is the surgical fixation of the diaphragm is the surgical intervention of choice, conventionally done via thoracotomy or laparotomy, but recent advances allow minimally invasive approaches too[5]. The aim of surgery is to position the diaphragm at the position of maximum inspiration, allowing re-expansion of the lung.[6]

Substantial elevation resulting from respiratory distress impairing daily life activities is the most common indication of surgery[15]. Yet, the exact timing of surgery is a matter of contention, a variable period of observation ranging from 6 to 24 months is advocated in literature[16].

While on observation, careful follow-up surveillance is very crucial to examine, analyze and judge the need for surgical operation depending upon the patient's clinical condition.

Selective, patient-centered, and tactful decisions should be taken while considering surgical interventions, especially in unilateral and low-level eventration in the elderly age group.[17]

Diaphragm plication has been widely practiced to treat elevated diaphragm and studies have shown improved diaphragm function in operated cases[18] but the long-term benefits of plication are yet uncertain.[6][17]

In our case, considering the age and the mildness of symptoms, a nonsurgical approach was pursued. Breathing exercises were taught and efforts for smoking cessation were made. In a 3 monthly follow-up visit, the patient was clinically stable. No progression of condition was noted in the chest X-Ray.

CONCLUSION

Late presentation in a female patient with a right-sided eventration and a probable association with tuberculosis infection are the distinctive features of this case. We focus on refraining the patent from avoidable operative intervention in view of the mild nature of the symptoms and no progression of the disease.

CONFLICT OF INTEREST

None

AUTHOR CONTRIBUTIONS

KP designed, reviewed and edited the original manuscript. SD reviewed and edited the manuscript.

ETHICAL APPROVAL

Written informed consent was obtained from the patient for publication of the case report.

ACKNOWLEDGMENTS

Dr. Robin man Karmacharya (Dhulikhel hospital), Dr. Satish Vaidya (Dhulikhel Hospital)

Consent: Informed and Written consent was obtained from the patient in her local language (Nepali).

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