

# Missed And Delayed Diagnosis Of Diaphragmatic Hernia: A Case Report

A Akhigbe, P Irabor

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## Abstract

A diagnosis of traumatic rupture of the left hemi-diaphragm, with herniation of the stomach and small bowel into the left hemi-thorax was made in a 28 year old man with over 3 years history of blunt abdominal trauma, and pelvic fracture at the time of the injury. A chest x-ray done about 21 months after the injury, was misdiagnosed as pulmonary Koch's disease and the patient had full anti-Koch's therapy for about 8 months without any improvement.

The diagnosis of left hemi-diaphragmatic rupture with intra-thoracic herniation of the stomach and small intestine was made on Computerized Tomography (CT) of the chest, which was done about 45 months after the accident. The importance of routine chest x-ray in patients with history of blunt abdominal or pelvic trauma as well as follow-up chest x-rays when a patient is on treatment for Koch's disease and comparison with the initial radiograph is highlighted.

## INTRODUCTION

Traumatic diaphragmatic hernia is a serious consequence of blunt abdominal trauma from road traffic accident (RTA). It has been reported to occur in between 3-8% of patients after major blunt trauma to the abdomen.<sup>1,2,3</sup> Due to the non-specific varied and confusing clinical signs and radiographic findings, with the presence of other additional intra-abdominal injuries, diagnosis is often delayed.<sup>4,5,6</sup>

The diagnosis of traumatic rupture of the diaphragm may remain elusive despite a variety of imaging options, including CT and sonography.<sup>7</sup> In some cases the delay in diagnosis is due to absence of symptoms at the time of injury.<sup>2,5,8</sup> The initial absence of symptoms at the time of injury may be due to absence of associated herniation or prolapse of intra-abdominal organs into the chest cavity ab initio, when the diaphragmatic rupture occurred.<sup>5,8,9,10</sup> Some of the patients only become symptomatic when there is complication to herniated organs, such as obstruction, strangulation or perforation.<sup>2,5,6</sup>

Pulmonary tuberculosis as a radiographic diagnosis is often inconclusive and so should be confirmed bacteriologically. Although in our environment, the bacteriological confirmation has been quite unreliable hence, radiologic features are often relied on. A series of studies has

demonstrated that no radiographic image can be considered to be absolutely specific for the disease, so much so that all attempts at establishing a universally acceptable radiological classification has failed.<sup>11,12</sup>

However, follow-up radiographs are advocated as this may pass for therapeutic trial, so that if no improvement is noted, further investigations can be done.

## CASE REPORT

Mr. E.I. was a 28 year old healthy looking young man, who presented with about 2 years history of pulmonary tuberculosis on therapy. He was referred for a repeat chest x-ray at a private x-ray centre in Benin City, Nigeria. This patient had presented with a history of left sided chest pain, pain at the tip of the left shoulder and "stomach" pain. There was no history of cough, fever or night sweats. However, he had a chest x-ray (PA) done in December 2002 and pulmonary Koch's disease was diagnosed radiographically. There was no bacteriological confirmation, as the patient did not have cough.

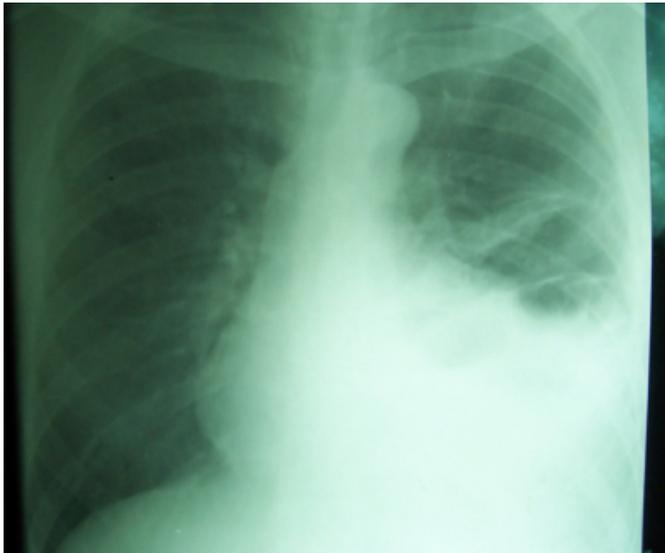
He had anti-Koch's therapy for about 8 months, but did not notice any improvement in his symptoms. He had a repeat chest x-ray about one month after the commencement of anti-Koch's therapy, which showed no change, but no further

investigation was done.

Since this patient's initial symptoms remained, with history of exacerbation on ingestion of alcohol, a repeat chest x-ray was requested in December 2004, which was 2 years after the initial diagnosis of pulmonary Koch's disease and treatment.

**Figure 1**

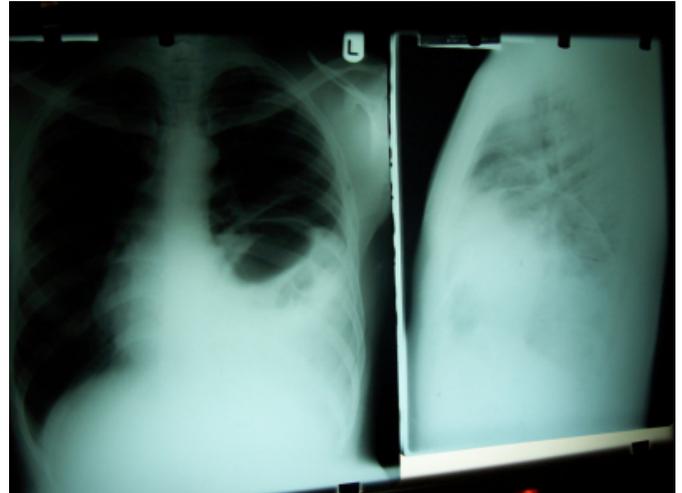
Figure 1: Initial radiograph taken 21 months after the injury



Postero-anterior and lateral chest radiographs were done, which showed multiple cystic lesions in the left mid and lower lung zones, with blunting of the left costophrenic angle, but no demonstrable meniscus and there was contralateral shift of the mediastinum. The lateral radiograph showed an elevated but apparently intact left hemi-diaphragmatic outline. Comparison with the previous radiograph of about 2 years earlier showed no change (figs. 1 & 2).

**Figure 2**

Figure 2: PA and lateral repeat chest x-ray done 2 years after anti-Koch's therapy



This led to an advise for further investigations, which included an upper abdominal scan and Computerized Tomography (CT) of the chest.

The upper abdominal scan, showed a normal spleen in the left hypochondrium, with a normal left kidney and some mixed echogenic soft tissue density was noted superior to the spleen, instead of the left hemi-diaphragm.

CT of the chest showed presence of cystic masses with classical valvulae conniventes of small bowel loops within the left chest cavity, from the level of T4 on the pre-contrast axial cuts (Fig. 3).

**Figure 3**

Figure 3: CT of the chest, pre-contrast axial cut showing small bowel loops in the chest

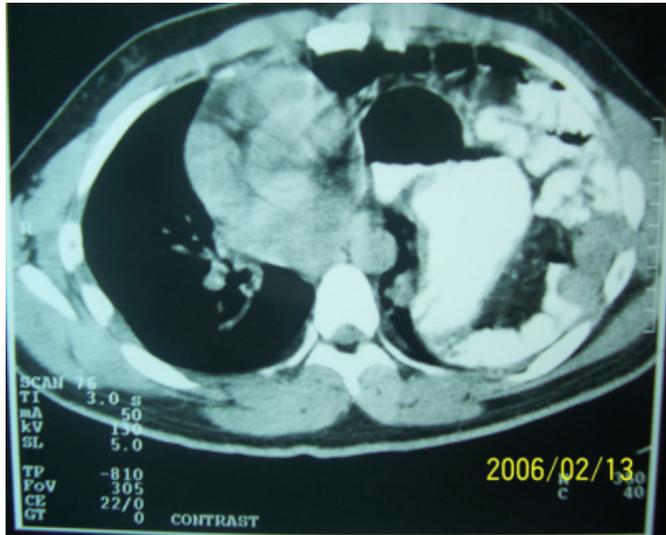


Following ingestion of diluted urografin orally, there was

opacification of the left intra-thoracic bowel loops and the stomach, with compression of the lower lobe of the left lung (Fig. 4).

**Figure 4**

Figure 4: CT of the chest with oral contrast ingestion showing opacified stomach and small bowel loops within the chest cavity.



Following this observation, further information was sought from the patient about history of blunt abdominal injury and he confirmed that he had a road traffic accident (RTA) on the 26<sup>th</sup> of March 2001, with a history of pelvic fracture. He had an x-ray of the pelvis done and was appropriately treated. Since he had no chest symptoms at the time of the trauma, no chest x-ray was done. His chest symptoms however started over 1 year after the accident and the first chest x-ray, which led to a misdiagnosis was done about 21 months after the RTA.

The present diagnosis of traumatic left diaphragmatic hernia was made about 45 months after the RTA.

**DISCUSSION**

Delayed diagnosis of traumatic diaphragmatic hernia is not unusual as in this case, especially when there was no chest symptom at the time of the trauma and there was another injury, which distracted any attention to the diaphragmatic rupture.<sup>(1,5,9)</sup>

This presentation is also similar to other reports from the literature, where diaphragmatic elevation was an incidental finding in an asymptomatic diaphragmatic rupture, which was later diagnosed 7 years after an automobile accident, even with associated lumbar vertebral fracture.<sup>8</sup>

This patient was probably entirely asymptomatic until his first presentation with some vague chest and abdominal symptoms, because there was no herniation as in the case in some of the reported cases in the literature.<sup>8, 9, 10</sup>

The most reported site of affectation is the left hemidiaphragm as in this case report.<sup>8, 13 14, 15, 16</sup>

The herniated organs in the chest cavity in this case report were the stomach and small intestine. This is similar to the findings in some reported cases where the spleen and left kidney did not herniate into the chest cavity.<sup>(8,15)</sup> This finding may also suggest that the herniation probably occurred later, through a created diaphragmatic rent during the RTA.

The misdiagnosis is an unusual one and this calls for caution in the interpretation of chest x-rays and the need for adequate clinical information from the referring physicians. This also highlights the importance of follow-up radiographs when a patient is on therapy for chest infections generally.

The need for comparative evaluation can also not be over emphasized, as seen in this case report. If attention had been paid to the fact that there was no improvement over the months of anti-Koch's therapy, further investigation would have shortened the period of delayed diagnosis and unnecessary anti-Koch's therapy.

Looking critically at the initial and subsequent chest radiographs, some basic principles were over-looked. Usually, post-primary pulmonary Koch's disease causes fibrosis and collapse, with ipsilateral shift of the mediastinum, but here there was a contra-lateral shift, suggesting a space occupying lesion on the left instead of reduced volume from fibrosis.

The history of pain at the tip of the left shoulder should have drawn attention to the possibility of a phrenic nerve irritation, which is also a pointer to a diaphragmatic lesion.

The lateral chest radiograph showed an elevated left hemidiaphragm, which can be correlated with the diaphragmatic irritation mentioned above.

Detailed analysis of this patient's signs and symptoms, with the radiographic findings could have avoided the pit-fall of the wrong diagnosis of pulmonary Koch's disease.

Even if the diagnosis was made, the period of misdiagnosis and wrong therapy could have been shortened, if follow-up radiographs were done with appropriate further

investigations ordered in view of the non-response to therapy.

## **CORRESPONDENCE TO**

Dr. A.O. Akhigbe Department of Radiology, University of Benin Teaching Hospital, Benin City 300001, Nigeria. E-mail: aoakhigbe@yahoo.com

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**Author Information**

**Adenike O. Akhigbe, FWACS**

Department of Radiology, University of Benin Teaching Hospital

**Pamela I. Irabor, FWACS**

Department of Radiology, University of Benin Teaching Hospital