

ORIGINAL ARTICLE

Iatrogenic pneumothorax: Experience of a Moroccan Emergency Center

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Abstract The incidence of iatrogenic pneumothorax (IPx) will increase with invasive procedures particularly at training hospitals, that is why we have made a retrospective study of the common diagnostic or therapeutic causes of IPx and its impact on morbidity. From January 2011 to December 2011, 36 patients developed IPx as emergencies, after an invasive procedure. Their mean age was 38 years (range: 19–69 years). Of the patients, 21 (58%) were male and 15 (42%) were female. The purpose was diagnostic in 6 cases and therapeutic in 30 cases. In 8 patients (22%) the procedure was performed due to underlying lung diseases and in 28 patients (78%) for other diseases. The procedure most frequently causing IPx was central venous catheterization, with 20 patients (55%), other frequent causes were mechanical ventilation in 8 cases (22%) (of whom we reported 3 cases of bilateral pneumothorax), 6 cases of thoracentesis (16%) and 2 patients had life-saving percutaneous tracheotomy. The majority of our patients were managed by a small chest tube placement (unilateral $n = 30$, bilateral $n = 3$). The average duration of drainage was 3 days (range: 1–15 days), sadly one of our patients died of ischemic brain damage 15 days after tracheotomy.

At training hospitals the incidence of IPx will increase with the increase in invasive procedures, which should only be performed by experienced personnel or under their supervision.

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PALAVRAS CHAVE

Pneumotórax;
Iatrogénico;
Drenagem

Pneumotórax Iatrogénico: experiência de um Centro de Emergência Marroquino

Resumo A incidência de pneumotórax iatrogénico (IPx) vai aumentar com procedimentos invasivos particularmente em hospitais de formação, sendo esse o motivo pelo qual fizemos um estudo retrospectivo do diagnóstico ou das causas terapêuticas comuns de IPx e do seu impacto na morbidade. Desde janeiro de 2011 até dezembro de 2011, 36 pacientes desenvolveram IPx

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como emergências, depois de um procedimento invasivo. A sua média de idades foi de 38 anos (intervalo: 19-69 anos). Dos pacientes, 21 (58%) eram do sexo masculino e 15 (42%) do sexo feminino. O objetivo era diagnóstico em 6 casos e terapêutico em 30 casos. Em 8 pacientes (22%) o procedimento foi realizado devido a doenças pulmonares subjacentes e em 28 pacientes (78%) por outras doenças. O procedimento que mais frequentemente provocou IPnx foi a cateterização venosa central, com 20 doentes (55%), outras causas frequentes foram a ventilação mecânica, 8 casos (22%) dos quais foram relatados 3 casos de pneumotórax bilateral, 6 casos de toracocentese (16%) e 2 pacientes traqueotomia percutânea de socorro. A maioria dos nossos pacientes foram submetidos à colocação de um pequeno dreno torácico (unilateral $n=30$, bilateral $n=3$). A duração média da drenagem foi de 3 dias (intervalo: 1-15 dias), tendo infelizmente um dos nossos pacientes falecido devido a dano cerebral isquémico, 15 dias após a traqueotomia.

Em hospitais de formação a incidência de IPnx aumentará com o cada vez maior número de procedimentos invasivos, que apenas devem ser desempenhados por pessoal experiente ou sob a supervisão do mesmo.

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Introduction

Pneumothorax is a serious but common complication of invasive chest procedures. Several procedures were identified as causing pneumothorax, but according to the literature the most frequent causes are thoracocentesis, central venous cannulation and barotraumas.

In the present climate of increased use of invasive procedures, the incidence of iatrogenic pneumothorax (IPx) is going to increase particularly in training hospitals. It is for this reason that we want to assess and delineate retrospectively the common diagnostic or therapeutic causes of IPx and its impact on morbidity.

Materials and methods

From January 2011 to December 2011, we listed 36 cases of patients who developed IPx in the emergency department, after an invasive procedure for diagnostic or therapeutic purposes. For each patient details of age, gender, the invasive procedure which caused IPnx, the specific treatment and consequences were recorded.

Results

The mean age was 38 years (range: 19–69 years). Twenty-one (58%) of the patients were male and 15 (42%) were female. All the invasive procedures which caused IPnx were performed as emergencies in the Emergency Department. The purpose of the invasive procedure was diagnostic in 6 cases and therapeutic in 30 cases.

8 patients (22%) had procedures for underlying lung or tracheal diseases and 28 patients (78%) for other diseases (Table 1).

The procedure type most frequently causing IPnx was subclavian and jugular central venous catheterization; 20 patients (55%) (right side: $n=15$; left side: $n=5$). The other frequent causes were barotrauma due to mechanical ventilation (Fig. 1): 8 cases (22%). Of this 8 there were 3 cases with bilateral pneumothorax, 6 cases of thoracocentesis

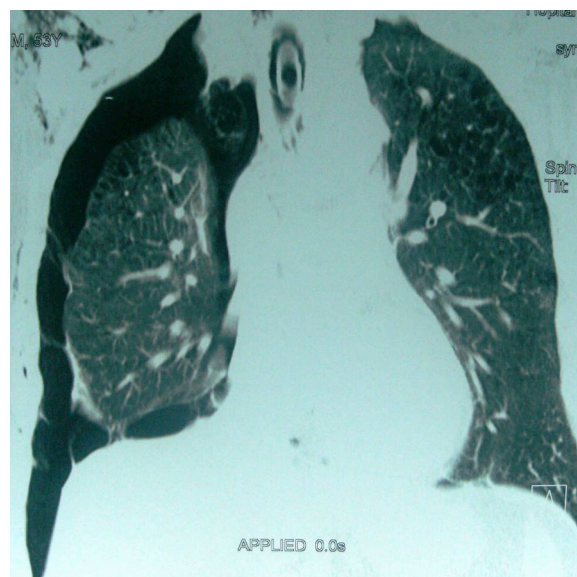


Figure 1 Chest CT showing a barotraumatic pneumothorax after mechanical ventilation.

(16%) and 2 patients had life-saving percutaneous tracheotomy (Table 2).

Clinical signs compatible with a pneumothorax were found in all patients with associated radiographic signs.

Percutaneous tracheotomies were performed by the physician (not a surgeon) who admitted the patient and indicated a life saving tracheotomy in the intensive care unit.

According to our protocol, once the invasive procedure is accomplished a systematic chest radiograph is taken.

Regardless of the causal procedure, and depending on patient stability and the size of the pneumothorax the majority ($n=33$, 91.6%) of our patients were managed by a small chest tube placement (unilateral $n=30$, bilateral $n=3$).

The chest tube placement was performed by a trained physician, using either the ventral approach (2–3 Intercostals space) in the mid-clavicular line, also called the approach according to Monaldi ($n=8$, chest tube Joly size

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