

DEATH DUE TO PNEUMONIA IN YOUNG ADULTS - A POST-MORTEM EXPERIENCE FROM THE DEPARTMENT OF LEGAL MEDICINE, KACYIRU HOSPITAL, KIGALI-RWANDA

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ABSTRACT

Pneumonia-related deaths in young healthy adults are not as frequent as in children below five years or adults aged 65 years and above- the two commonly affected groups. Various data clearly support this assumption. Therefore, young people within the 5 to 44 years age group dying in unclear circumstances are first thought to have died of other causes such as sudden cardiac disease, drug intoxication or bodily injuries, rather than pneumonia.

In this report, we present two cases of young adults who were found dead in unknown circumstances. The manner of death in both cases was initially presumed as unnatural by the police, but following detailed forensic examination, definitive conclusions of death due to pneumonia were made.

Keywords: Pneumonia, young adults, Forensic Summer School

INTRODUCTION

Pneumonia-related deaths in young healthy adults are not as frequent as in children below five years or adults aged 65 years and above- the two commonly affected groups, especially when the deaths occur in unknown or unexpected circumstances. Research has shown that 1.6 million children under the age of five die from pneumonia every year accounting for 18% of the total deaths in this age group. This places pneumonia as the number one cause of death in children under five worldwide (1). Low and middle-income countries especially those in South Asia and Sub-Saharan Africa account for the largest bulk of pneumonia-related death worldwide. (2)

Further research has also shown that, pneumonia mortality rate is highest in individuals aged 80 and over (279 deaths per 100000 people) in Western Europe, while it is highest in early neonates less than 6 days old (278 deaths per 100000 people) in Eastern Europe (1). In the United States, mortality rates show an almost similar trend as observed in Western Europe with the 65 years and above age group, the most affected - 85% mortality rate compared to the younger individuals (3). This data clearly supports the assumption of the less prevalence and decreased mortality rates due to pneumonia in young adults within the 5 to 44 years age group. It also explains why young adults dying in unclear circumstances, are first thought to have died of other causes such as sudden cardiac disease, drug intoxication or bodily injuries, rather than pneumonia.

In this report, we present two cases of young adults who were found dead in unknown circumstances. The manner of death was initially presumed as unnatural by the police, but following autopsy, definitive conclusions of natural causes were made. Both cases were investigated at the Kacyiru Hospital mortuary during an interdisciplinary forensic summer school, which is held every year since 2012 in Kigali-Rwanda through cooperation between the University of Rwanda and the Institute of Legal Medicine at the University Medical Center Hamburg-Eppendorf, Germany with funding from the German Academic Exchange Service (DAAD).

Case Report

Case 1

A body of an adult male was found lying besides a road in one of the neighborhoods of Kigali. There was no hint for road traffic accident as well as any eyewitness account. The police suspected possible criminal action and decided to deliver the body to the legal medicine department of Kacyiru Hospital/ Kigali for further forensic examination.

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External investigation:

Male of about 40 years, body weight 50 kg and length of 164 cm (BMI: 18.6 kg/m²).

Further inspection of the body revealed a state of general neglect with poor hygiene (dirty clothing with no underwear). Unspecific older hematomas were noted on the skull and left side of the chest. Yellow sclerae were noted. Numerous old abrasions were also noted on both lower limbs. No signs relating to acute external force were noted.

Autopsy findings:

The cause of death was diffuse pneumonia (lobar type, most marked on the left upper lobe) with concomitant fibrinous pleuritis, severe pulmonary edema and hints to septicemia (slight blood clotting and softening of the spleen). Severe anthracosis, chronic bronchitis and emphysema. No arteriosclerosis or coronary disease.

Fatty liver, hepatosplenomegaly, adrenal exhaustion were also noted.

No arteriosclerosis or coronary disease was noted.

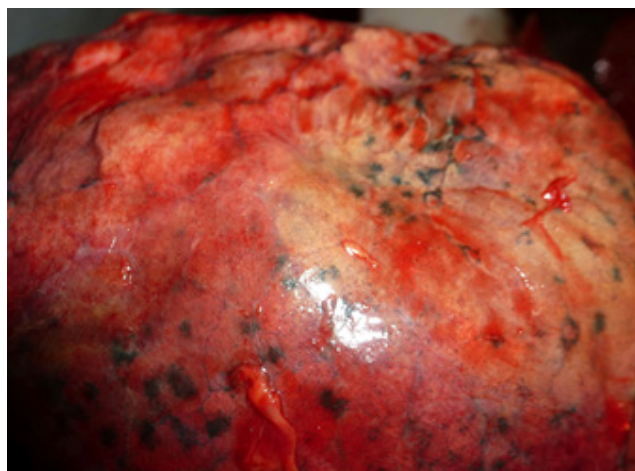


Fig1.1: Chronic emphysema, severe anthracosis and fibrinous pleuritis noted before dissection of the lung

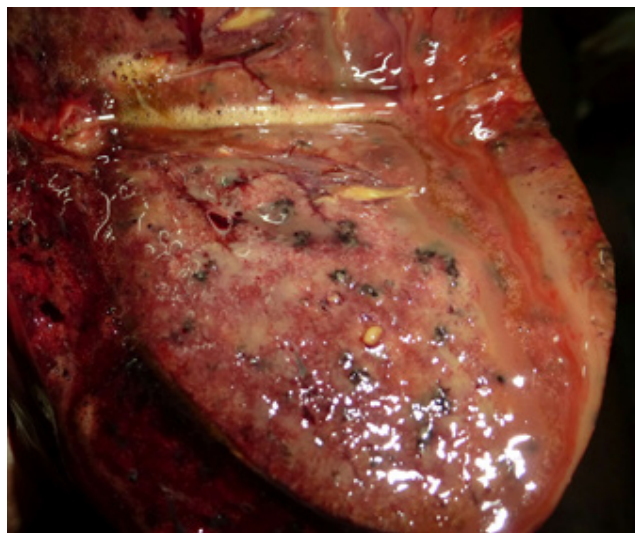


Fig1.2: Diffuse pneumonia, pulmonary edema, anthracosis and purulent bronchitis

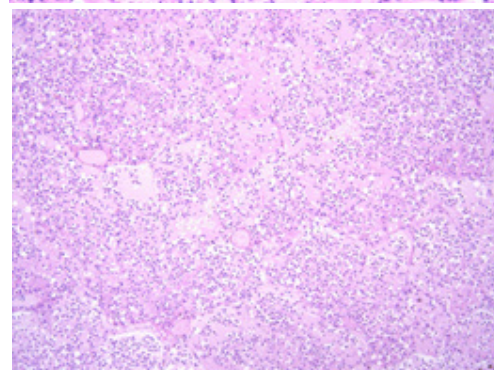
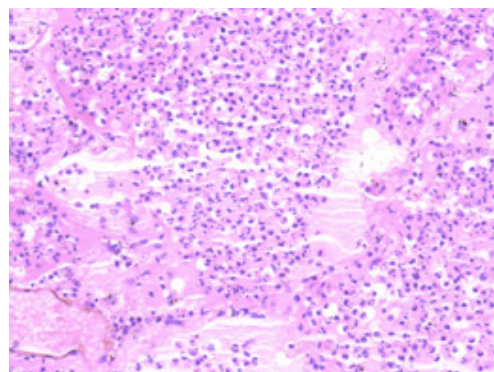
Histology:

Fig 1.3: Pneumonia

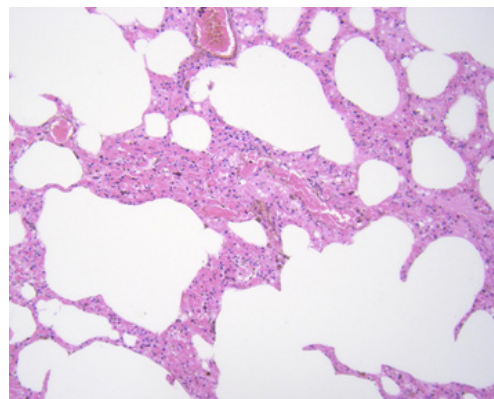


Fig1.4: Chronic emphysema

Case 2

A body of an adult male was found lying by the roadside with no known history or events leading to death. Since there were no obvious injuries, the police suspected foul play and hence requested for a forensic medical examination to ascertain the manner and cause of death.

External investigation:

Male of about 30-40 years of age, body weight 60kg and length 156cm (BMI: 24.7kg/m²). Many old scars on the forehead, mouth and left leg. About 12-15 scars of length between 10-15cm each on the abdomen. Some bruises on the left lower leg, both shoulders and forehead. General neglect with poor hygiene and dirty clothing was remarked.



Fig 2.1: Numerous scars on the abdomen

Autopsy findings:

Death was due to purulent bronchitis and lobar pneumonia with yellow hepatization of the right lung. Concomitant fibrinous pleuritis, severe anthracosis, signs of septicemia (clotted blood), adrenal exhaustion as well as myocardial dilatation. Hepatomegaly with marked fatty changes. No arteriosclerosis or brain alterations. Empty stomach and empty bladder. No injuries to internal organs were objectivated.

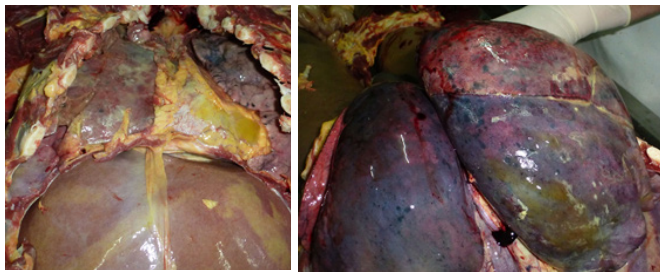


Fig 2.2 (a and b): Fibrinous pleuritis. Note also the hepatomegaly in fig (a)

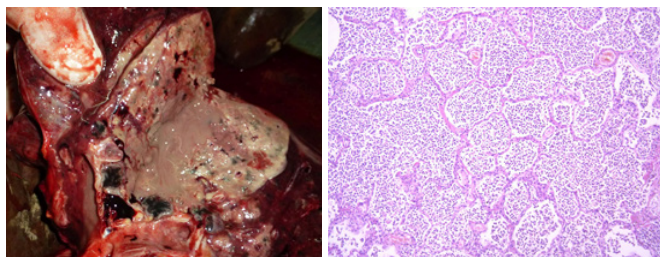


Fig 2.3 (a and b): Severe purulent pneumonia noted both macro and microscopically

DISCUSSION

Pneumonia is an acute infection of one or both lungs. Engorgement of the alveoli with pus and fluid following the infection limits oxygen intake thereby altering the whole process of gaseous exchange. Signs and symptoms of pneumonia range from mild to severe and death rapidly ensues if not well managed, especially in the high-risk groups. Signs and symptoms of pneumonia include: fever, chills, persistent cough that does not improve or gets worse, shortness of breath as well as chest pain. The pathogens most commonly implicated are *Streptococcus pneumoniae*, *Hemophilus Influenzae* type b (Hib) and respiratory syncytial virus (RSV). *S.pneumoniae* accounts for the most cases of

bacterial pneumonia in all age populations especially children under the age of five in developing countries (1). RSV on the other hand, being the commonest cause of viral pneumonia in children under two years of age. However, fungi only tend to cause pneumonia in individuals with reduced immunity unlike bacteria and viruses.

Pneumonia can be acquired through: the community (Community-acquired pneumonia), hospital setting (Hospital-acquired pneumonia) or as a result of aspiration. As earlier stated, children under the age of five and adults aged 65 years and over are the most commonly affected, with mortality in young and healthy adults less likely. Other common risk factors include smoking; underlying lung diseases such as asthma or COPD; other underlying medical conditions such as diabetes or heart disease; as well as immunosuppression from malnutrition, chemotherapy, HIV infection, organ transplantation or chronic steroid use.

CONCLUSION:

Unexplained death in young adults such as described in the two cases above tend not to focus on pneumonia especially if no clear prior history of the individual was known. Given that the vaccine against pneumonia as well treatment with medications have been proved to be largely effective in preventing pneumonia-related deaths, young adults need to be encouraged to seek treatment whenever they present any symptoms suggestive of pneumonia. Our case report also indicates the importance of a detailed forensic examination especially in young adults dying in unclear circumstances, as this helps to definitively establish the cause of death.

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