



## Original communication

## Sudden unexpected death from natural diseases: Fifteen years' experience with 484 cases in Seychelles

Peng Zhao <sup>a</sup>, Ji-Gang Wang <sup>a, \*</sup>, Peng Gao <sup>b</sup>, Xia Li <sup>a</sup>, Rubell Brewer <sup>c</sup><sup>a</sup> Department of Pathology, The Affiliated Hospital of Qingdao University, Qingdao, 266003, China<sup>b</sup> Department of General Surgery, The Affiliated Hospital of Qingdao University, Qingdao, 266003, China<sup>c</sup> Clinical Pathology Laboratory, Victoria Hospital, Ministry of Health, P.O.BOX 52, MAHE, Seychelles

## ARTICLE INFO

## Article history:

Received 9 May 2015

Received in revised form

8 September 2015

Accepted 24 October 2015

Available online 2 November 2015

## Keywords:

Sudden death

Autopsy

Seychelles

## ABSTRACT

The aim of this study is to identify and subclassify sudden natural death (sudden death from natural diseases) cases in Seychelles. A total of 484 sudden natural death cases with autopsy at the Clinical Pathology Laboratory, Victoria Hospital, Seychelles between 1997 through 2012 were retrospectively reviewed. Among them, 363 cases (75%) were male and 121 (25%) were female. The most frequent sudden deaths were attributed to cardiovascular diseases (78.5%), and then followed by infectious diseases (9.9%), and gastrointestinal diseases (9.1%). This is the largest population-based study on sudden natural deaths in Seychelles.

© 2015 Elsevier Ltd and Faculty of Forensic and Legal Medicine. All rights reserved.

## 1. Introduction

Sudden natural (unexpected) death is the unpredictable death which is not caused by a traumatic event or suicide that occurs within 24 h of the onset of symptoms in an apparently healthy subject or in one whose disease was not so severe that such an abrupt outcome could have been predicted.<sup>1–3</sup> The description states that it is an otherwise healthy patient unexpectedly dies within 24 h of the onset of symptoms. Non-natural causes such as trauma and intoxication must be ruled out with history taking, autopsy findings, and police investigation. In many cases, the death causes can only be inferred relying on the medical history and autopsy findings. However, the medical certification of death causes by doctors can be inaccurate. To certify the death causes more accurately, careful autopsy and medical history review by coroners are very necessary.<sup>4,5</sup>

Seychelles is a group of islands located in the West Indian Ocean with a population about 92,000 (2012), in which urban population accounts for 53.9% (data from GeoHive). The country enjoys a relatively stable economic environment as a high-middle-income country with a lucrative fishing and tourism industry. GDP per capita there is about \$26,492 in 2013.<sup>6</sup> The climate is equable

although quite humid, classified by Köppen-Geiger system as tropical rain forest. The majority of the population is of African descent and 90% of the total population lives on the largest island. It was an English-French colony in Africa, and thus the life style there is similar to the western world. The medical service system is well developed.<sup>7</sup> The government has spared no effort and investment towards the improvement of its people's wellbeing, social and health status, and provides free health service to the entire population, from cradle to grave, and has very strong policies and programs for early childhood, children, youth and the elderly. Health care is available free of charge to all inhabitants through a national health system, which reduces barriers for health care and improves the likelihood of adequate ascertainment of causes of death. All deaths occurring in Seychelles are medically certified using death certificates with 4 separate fields for the immediate, intermediate, underlying, and contributory causes of death. Information for each field is registered into a central database as entered by the certifying doctors.<sup>8</sup> The autopsy there is a common practice with an average of 160–190 cases a year, accounting for more than 20% of all the deaths. The autopsy rate (both clinical and forensic) there is higher than most European and Asian countries.<sup>9</sup> Because there are no forensic doctors in Seychelles, the autopsies are performed by pathologists. All sudden deaths at home are treated as police cases. The aim of the study is to review the sudden natural death cases in Seychelles, which were collected by the authors during their medical volunteers' work there. To the best of our knowledge, this

\* Corresponding author. Tel.: +86 532 82919353; fax: +86 532 82919600.

E-mail address: [qdwangjigang@hotmail.com](mailto:qdwangjigang@hotmail.com) (J.-G. Wang).

is the largest population based study on sudden natural deaths in Seychelles.

## 2. Materials and methods

A total of 2327 sequential autopsies were identified from 1997 to 2012 in the autopsy database of Clinical Pathology Laboratory, Victoria hospital, Seychelles. The crude death rate in the corresponding period in Seychelles is about 7‰ ([www.indexmundi.com/facts/seychelles/](http://www.indexmundi.com/facts/seychelles/)). There are two main types of autopsies: forensic autopsy and clinical autopsy. The former is applied by the police during the investigation of criminal law cases and civil law cases, and the latter is applied by the hospital to gain more insight into pathological processes and determine what factors contributed to a patient's death. All autopsies are approved by the family of the deceased person and an authorization form for autopsy is signed. This cohort included 1845 forensic autopsies and 482 clinical autopsies. These cases are from 16 countries including 4 different races/ethnicities (2129 black, 150 American Indian or Alaskan Native, 46 white, and 2 Asian or Pacific Islander). The enrolled case should meet the following criteria: a) a definite pathological diagnosis was available; b) died of natural diseases; c) the death process was abrupt and unexpected, and the patient appeared well before the onset of symptoms. According to this inclusion criteria, 484 sudden natural deaths (20.8%), including 41 tourists from the other 15 countries, were included in this study. This study was authorized by the Medical & Dental Council, Ministry of Health of Seychelles. No ethics approval was necessary because only aggregated data were used.

The cadavers were carefully dissected conforming to Practice Guidelines for Autopsy Pathology.<sup>10–12</sup> The organs (including heart, great vessel, brain, lung, stomach, intestine, pancreas, liver, spleen, thyroid, adrenals, kidney, bladder, prostate, uterus, and ovary) were carefully examined and dissected. The dissected tissue samples were fixed with 10% formalin, embedded in paraffin, and then sectioned. All sections were stained with hematoxylin and eosin, and observed by two pathologists. The autopsy diagnosis was made based on the positive pathologic findings, either grossly or microscopically. Only the most important and serious pathologic alteration was considered as the cause of sudden death and was included in the present study. If no significant positive pathologic lesion was observed, the diagnosis was made by the medical history and clinical diagnosis (for example, epilepsy). Cardiac blood was sampled for microbiology.

## 3. Results

### 3.1. Gender and age distribution

There were 363 males and 121 females in the 484 sudden natural deaths (with an overall male to female ratio of 3 to 1). Their age on death ranged from 4 days to 97 years (mean age: 49.1 years). The peak ages were 41–50 years for males (93 cases) and 61–70 years for females (30 cases) (Fig. 1).

### 3.2. Death cause distribution

The major death causes of the 484 sudden natural deaths are outlined in Fig. 2. The most common finding was cardiovascular diseases (380/484, accounting for 78.5%), which could be observed in almost all age groups (Table 1, Fig. 3). Among the 5 cardiovascular diseases, coronary artery disease (CAD)/myocardial infarction (MI) occurred most frequently (55% of cardiovascular deaths). CAD/MI was mainly identified in deaths older than 30 years. In death group  $\leq 30$  years, CAD/MI related sudden natural death was not found

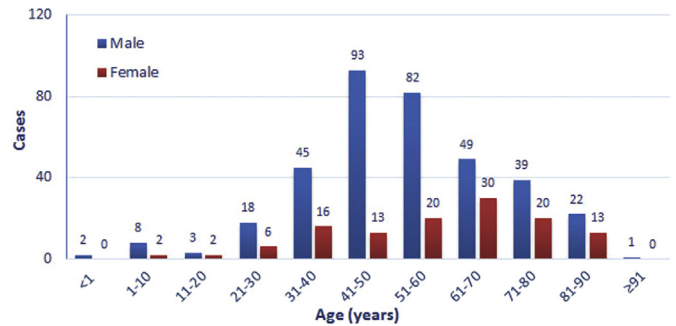


Fig. 1. The gender and age distribution of the 484 sudden deaths.

(Fig. 4). In descending order of frequency the pathologic manifestations of CAD/MI were: coronary atheroma, cardiac enlargement, myocardial infarction, coronary thrombosis, mural thrombus, ventricular aneurysm, and cardiac rupture (Table 2). Acute pulmonary embolism (APE) was the second most common cause for sudden natural deaths (56/380, 4.7%), with deep vein thrombo-embolus observed in 55 cases, and fat embolism observed in 1 case. Cardiomyopathy was the most common finding in deaths younger than 30 years, accounting for 66.7% (12/18) (Fig. 4). There were 49 sudden natural deaths caused by cardiomyopathy in all age groups. In addition, intracranial berry aneurysm (including arteriovenous malformation) (39/380, 10.3%) and ruptured aortic aneurysm (28/380, 7.4%) also could be observed. The former that may lead to cerebral or subarachnoid hemorrhage were observed in all age groups, while the latter occurred mainly in groups aged  $\geq 30$  years.

The majority of the other death causes were infectious diseases (46/484, 9.9%). Pneumonia (20 cases, 12 cases of bronchopneumonia and 8 cases of lobar pneumonia) often affected children and elderly. Peritonitis was found in 12 cases, which was often related to GI perforation (especially peptic perforation). In these cases, the nature of ulceration could be observed. Septicemia (12 cases) was also an important reason for sudden natural death when in time emergency treatment was not obtained. In this series, the primary causes of septicemia were: cholangitis (2 cases), appendicitis (1 case), pyelonephritis (1 case), and multiple abscesses (unknown primary site) (8 cases). In addition, massive pulmonary hemorrhagic inflammation caused by leptospirosis was identified in 2 cases.

Gastrointestinal (GI) diseases (44/484, 9.1%) were also common causes responsible for sudden natural death. Acute hemorrhagic necrotizing pancreatitis (AHNP) was the most common cause (32/44, 72.7%) in all GI diseases related deaths. Our study showed there were 27 males in 32 AHNP cases (84.4%). Of the 27 male cases, ethanol was detected in the gastric content in 26 cases. Another

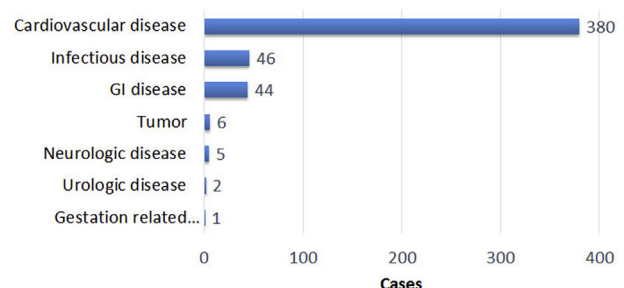


Fig. 2. The major autopsy findings of the 484 sudden deaths.

Download English Version:

<https://daneshyari.com/en/article/101704>

Download Persian Version:

<https://daneshyari.com/article/101704>

[Daneshyari.com](https://daneshyari.com)