Case report

Rarely Fatal Non-traumatic Intracerebral Hemorrhage of a Young Woman: Case Report

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Abstract

Most of the sudden deaths from a cerebral hemorrhage at the age of 18-35 years are rare, especially under the age of 25. This article reports the case of a 22 years old woman who suddenly died from intracerebral hemorrhage at left putamen without vascular malformation.

Keywords: Intracerebral hemorrhage, SUND, Young woman

Received: 30 January 2020 **Revised:** 14 May 2020 **Accepted:** 19 May 2020

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Introduction

Sudden unexpected natural death (SUND) in an adult without any significant past history of prolonged illness has been a subject of continuing interest among medical professionals. The definition of a sudden death varies according to authority and convention. The World Health Organization (WHO) definition is of natural death within 24 hours from the onset of symptoms. However, studies in young adults, particularly in the 18-35 year age group, are rare. The majority of deaths are due to cardiac causes.[1-5] We report a 22-year-old woman who died caused by intracerebral hemorrhage without underlying disease or any pre symptoms.

Case description

The death of a 22-year-old Lao woman was sent to a private hospital with a history of her relatives found unconscious at home. The private hospital found her dead and sent for post-mortem examination. The relatives gave the history that the deceased married with her Thai husband for about 2 years without a child. Her occupation is a housewife. She has never been diagnosed with any disease and no history of any drugs used. The relatives found that she was sleeping unconsciously inside her home at 12.30 P.M. Then they brought her to the hospital at 1 P.M. At ER medical record of no vital signs, and she was declared dead at 2.00 P.M.

Autopsy findings

The external examination of the body identified no sign of injury and coagulopathy. Internal examination reveals heart (weight 300 gram) with unremarkable myocardium, valve and coronary arteries both lungs (right lung weight 730 gram and left lung weight 700 gram) with diffuse edema; unremarkable abdominal and pelvic organs; brain (weight 1,250 gram) was free of abnormally external bleeding (e.g. EDH, SDH). The brain was diffuse swelling, but no signs of midline shifting. There is a 1.5 cm of out-pouching of an artery at left bifurcation of middle cerebral artery and posterior communicating artery of the circle of Willis, consistent with saccular aneurysm (Figure 1). Cross sectional images of her brain reveals intracerebral hemorrhage at Rt. putamen size 4 x 3.5 x 3 cm (Figure 2).

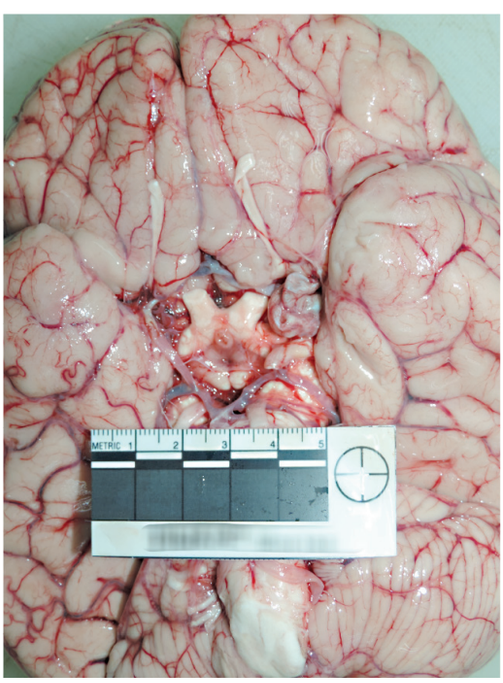

Figure 1 Saccular aneurysm of the left posterior communicating artery in a fresh specimen

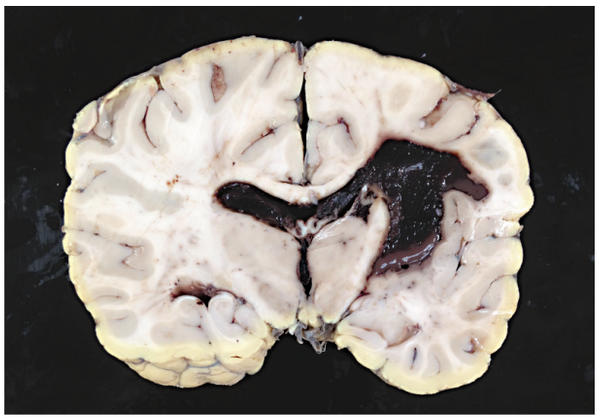

Figure 2 Intracerebral hemorrhage at Rt. Putamen

The section at the out-pouching of artery demonstrates dilated vascular space with focal tunica media thinning area. The elastic stain shows focal loss of elastic layer of aneurysm wall. Atheromatous plaques and calcification are also found at wall of the aneurysm (Figure 3). Atheromatous plaques and calcification are also found at wall of the aneurysm (Figure 4).

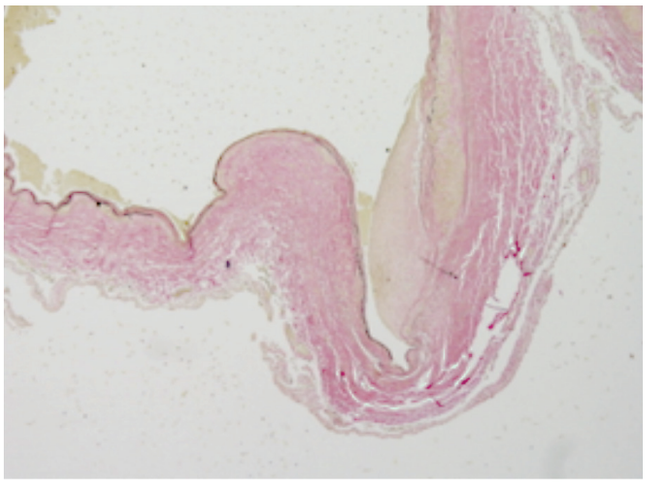

Figure 3 The elastic stain of elastic layer of aneurysm wall

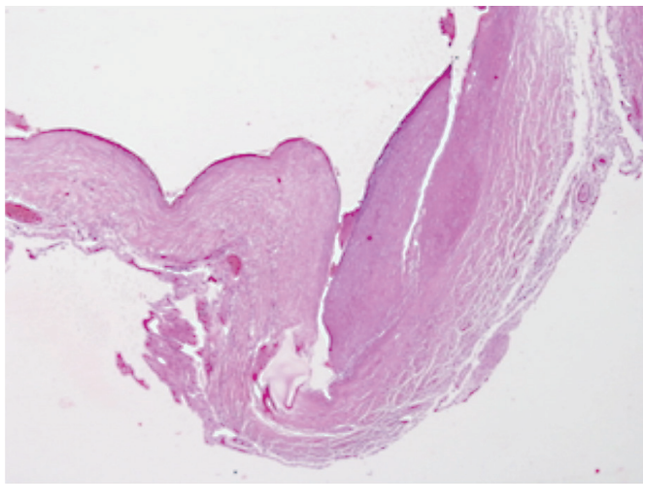

Figure 4 Atheromatous plaques and calcification are also found at wall of the aneurysm

Serial sectioning of the brain shows bilateral, third and fourth ventricular hemorrhage. Heart weighing 300 gm displayed normal sized right and left ventricular chambers with right and ventricular free wall thickness of 0.3 cm and 0.5 cm, respectively. Right and left renal arteries were patent. Bilateral kidneys and adrenal glands were devoid of any pathologic lesion. The other organs are unremarkable. Screening of toxicological tests is unremarkable.

Discussion

Many studies in sudden unexpected natural death in young adults (age 18-35 years) found that most deaths are due to cardiac causes. However, there are few studies in intracerebral hemorrhage in young adults. The study in Australia has found that 56.4% of SUND were cardiac causes and non-cardiac causes found intracerebral hemorrhage due to non-cardiac causes were found 23.8%.[1] Morentin et al. studied sudden death in Spain they found sudden death of 107 cases in the age range 1-35 years old only 10 cases were death by intracranial hemorrhage.[2]

Intracerebral hemorrhage is defined by its location within the brain parenchyma, with “deep” ICH being located within the basal ganglia and internal capsule, brain stem, and cerebellum. In contrast, “lobar” ICH refers to hemorrhages located in cortical–subcortical areas.[3] There are few studies about intracerebral hemorrhage in young adult patients, especially in the age range less than 25 years old. Most of the literature studies in the age range 15-45 years old and mean age about 30 years old; most of the patients are male. Schutz’s study found intracerebral hemorrhage in the age range 20-29 years old, only 3 cases (male 2 cases, female 1 case). The most common cause of intracerebral hemorrhage in the age group <40 years old is vascular malformation (6 cases) and more commonly had lobar hematomas (50%); only one patient had a putaminal hematoma, one had a cerebellar hematoma, and one had hemorrhaged into the head of the caudate nucleus.[4] The Italian study in 1983-1985 reported average annual age-and sex-specific incidence rates of the first stroke in young adults age 15-24 years old is 0 in female and 3.2 in male per 100,000/year.[5]

In Taiwan study in intracerebral hemorrhage patients age less than 45 years old, in an age group, 15-25 years old of most common cause came from vascular anomalies that relate with lobar hemorrhage.[6] Consistent with Toffol et al’s study that most common

cause of intracerebral hemorrhage in young adults were arteriovenous malformations (29.2%), hypertension (15.2%), rupture saccular aneurysm (9.7%), and sympathomimetic drug abuse (6.9%), respectively.[7] And study in Mexico that the most common causes of intracerebral hemorrhage were rupture of an arteriovenous malformation (33%), cavernous angioma (16%), and hypertension (11%).[8] There were study show that cocaine use are a risk factor of intracerebral hemorrhage in young adults.[9]

In Thailand, 1 case report in female patient age 13 years old and nine months. CT scan found intracerebral hemorrhage at the left basal ganglion and cerebral angiography reported no arteriovenous malformation.[10] The autopsy identified non-ruptured saccular aneurysm at left anterior cerebral artery and left putamen hemorrhage. The histological section did not find vascular malformation. These characteristics are less common. There is no report of SUND due to intracerebral hemorrhage in young adult Thai. In our case report, the section shows atheromatous plaques and calcification in aneurysm wall and no histologic evidence of malformed vessels with abrupt change in thickness of medial and elastic layers nor abnormal vascular dilatation.

Investigation of sudden death in young patients should consider neurological causes as the second most common disease after cardiac pathology, and thoroughly post mortem examination to find a clear cause. Further studies for SUND in the young in Thai population are necessary for epidemiological data.

Acknowledgments

Financial support. None reported. Potential conflicts of interest. All authors report no conflicts of interest relevant to this article.

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บทคัดย่อ

การเสียชีวิตจากภาวะเลือดออกในสมองในหญิงอายุน้อย: รายงานผู้ป่วย

ทศนัย พิพัฒน์โชติธรรม, ฉัตรชัย ธรรมวงศ์สกุล

ภาควิชาพยาธิวิทยาและนิติเวชวิทยา คณะแพทยศาสตร์ มหาวิทยาลัยธรรมศาสตร์

โดยส่วนใหญ่ผู้เสียชีวิตกระทันหันจากภาวะเลือดออกในสมองในช่วงอายุ 18-35 ปี พบได้น้อย โดยเฉพาะอย่างยิ่งอายุน้อยกว่า 25 ปี บทความนี้ได้รายงานเคสผู้ป่วยหญิงอายุ 22 ปี ที่เสียชีวิตกระทันหันจากภาวะเลือดออกในสมองที่พิวตาเมนข้างซ้าย โดยไม่พบความผิดปรกติของหลอดเลือด

คำสำคัญ: ภาวะเลือดออกในสมอง, การเสียชีวิตเฉียบพลัน, หญิงอายุน้อย