

A Common Scenario of Hypertension with Diabetes Mellitus in Rural Thai People: A Case Report

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ABSTRACT

The study aimed to understand both clinical critical points and socio-economic factors contributing to hypertension (HT) in patients with diabetes mellitus (DM) in rural Thailand. A case was selected from Chiang Sean Hospital who was diagnosed as HT with DM. Data were extracted from both medical records and interview with patients to determine the socio-economic factors. A Thai-men aged 52 years with body mass index (BMI) at 25.69 kg/m², waist 96 cm was diagnosed with HT and DM 4 years ago. He was under the cared for and treated at Chiang Sean Hospital with the blood pressure at 167/110 mmHg and oral enalapril 5 mg. was the first drug of choice. His blood glucose level at the beginning was 123 mg/dl and Metformin 500 mg was given. During the follow up at Chiang Sean Hospital, he still had a high blood pressure with uncontrolled blood sugar level. He also had dyslipidemia and gout with high cholesterol level (244 mg/dl), high triglyceride level (334 mg/dl), high level of low-density lipoprotein (121 mg/dl) and high uric acid level (12.1 mg/dl). He lived in a poor family and had low education. He also lived with poor family support. Health professionals should focus on holistic care approach in treating and caring for patients living with complicated Non-communicable disease (NCD) condition as this is essential to cover both individual pathological and socio-economic surrounding factors for proper case management.

Keywords: *Non-communicable disease, Hypertension, Diabetes mellitus, Rural Thailand*

Introduction

Non-communicable disease (NCD) is a major public health threat globally which is needs large investment for treatment and care [1, 2]. World Health Organization (WHO) reported that 41 million people were killed from NCD globally in each year which is equivalent to 71.0% of all deaths [3]. Every year, a NCD accounts for premature deaths of 15 million people aged 30-60 years with 85.0% of it occurring in low and middle income countries including Thailand. WHO also reported that tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diet were the potential risk factors of NCD [3]. WHO indicated that poverty was closely related to and initiated NCD particularly in developing countries [4]. Nearly 30.0% of death related to NCD were reported in low-income countries [4].

Thailand's health care system has been recognized as one of the best health care service system among developing countries particularly in having great health insurance system to make sure that all citizens have met the basic medical and public health

care need by accessing health care services. Thailand However, is not excluded from the trend of NCD even in rural areas. Many NCD cases present a complicated pathology which is often related to other factors such as socio-economic and lifestyle [2].

In 2018, Chiang Sean District reported that the morbidity rate of HT and DM were 1,114 per 100,000 populations and 423 per 100,000 populations respectively. Meanwhile, the numbers of comorbidity of HT and DM with complicated cases are rapidly increasing [5-8]. Several standard drugs were used for treatment and its complication prevention purposes [9, 10] Therefore, the objective of this case report was to understand the significance of both the clinical critical points and the impact of socio-economic factors on patients with hypertension (HT) and diabetes mellitus (DM) and its management in persons who lived in rural Thailand.

Methods

A case report was conducted at Chiang Sean hospital which is a secondary hospital located in rural Thailand. A study and access to all medical records were permitted by the hospital director and the chief of chronic disease management clinic for completion of the case investigation. The investigators consisted of a medical doctor, nurse, and public health professional. A case diagnosed with HT and DM was selected from NCD clinic. A case was asked to obtain informed consent before extracting all relevant information from various sources including obtaining information from face-to-face interview. Data were collected from medical records, laboratory results, a doctor's view, and also interview to get data on socio-economic status.

Results

A Case

A married Thai-man aged 52 years was diagnosed as HT and DM. On 10th July 2019, he was asked to join the study. His body mass index (BMI) was 25.69 kg/m², waist was 96 cm. He had been diagnosed as HT with DM 4 years ago. His blood pressure when he began on treatment was 167/110 mmHg. and was treated with oral enalapril 5 mg. Oral metformin 500 mg. was given to control blood glucose level of 123 mg/dl at the first day of treatment. His last visit at Chiang Sean hospital found the uncontrolled both blood pressure and blood glucose (Table 1). He also was diagnosed as with dyslipidemia and gout eventually. Many biomarkers were presented over the standard levels; cholesterol (244 mg/dl), triglyceride (334 mg/dl), low density lipoprotein (121 mg/dl), and uric acid (12.1 mg/dl) (Table 1). High levels of these

biomarkers are resulting in the development of other health problems (Figure 1)

Personal behaviors

A case had no education and had several poor health behaviors including drinking alcohol for 27 years, and regular unhealthy diet. He also lived in poor economic conditions with 5 family members. He worked as a farmer and did unprofessional jobs in the village. Sticky rice was the main food with local salty and spicy food. Fermented fish and food were common. He claimed that he had no time and place for exercise but drinking alcohol every day. He says that it was too difficult to follow the advice of a doctor or nurse from hospital to maintain healthy diet since he has limited choices. He has lived in severe poverty with his family which makes him sad and stressed leading to the use of alcohol. Eventually, he was diagnosed with gout and dyslipidemia.

Discussion

Today, people in rural Thailand are facing a serious health problem, NCD, which is developed based on their personal behaviors and also socio-economic status. This problem needs to be addressed by the involvement of several sections; patient, family, and community. There is a large expense required for case management while attending a hospital. The patient needs to get several pills a day to control blood glucose, blood pressure, uric acid, and lipid levels. If a patient can not follow the advice from health professionals, severe complications will develop which would be difficult to manage later [11, 12]. However, the complications are not developed from only patients' personal characteristics but also from social and economic factors. To address this particular

Table 1 History of laboratory results

Date	Uric acid (mg/dl)	Cholesterol (mg/dl)	LDL (mg/dl)	Triglyceride (mg/dl)	BP (mmHg)	FBS (mg/dl)	HbA1c (%)
Feb 12 th , 2014	6.8	N/A	N/A	N/A	200/120	N/A	N/A
Feb 19 th , 2014	N/A	244	121	334	167/110	90	N/A
June 9 th , 2014	12.1	N/A	N/A	N/A	130/80	N/A	N/A
Sep 1 st , 2014	9.2	N/A	N/A	N/A	149/103	N/A	N/A
May 15 th , 2015	N/A	234	100	363	136/106	105	N/A
Aug 7 th , 2015	9.7	N/A	N/A	N/A	130/90	109	N/A
Oct 30 th , 2015	N/A	196	77	350	137/90	N/A	N/A
April 18 th , 2016	10.8	204	400	667	129/90	133	N/A
July 29 th , 2016	N/A	N/A	N/A	N/A	125/88	128	N/A
Jan 27 th , 2017	9.3	N/A	N/A	N/A	152/97	N/A	N/A
Sep 25 th , 2017	8.1	N/A	N/A	N/A	142/105	125	N/A
Sep 21 st , 2018	N/A	N/A	N/A	N/A	130/91	186	N/A
Sep 26 th , 2018	N/A	N/A	N/A	N/A	155/98	106	9.3
Oct 24 th , 2019	N/A	N/A	N/A	N/A	153/97	184	N/A
Jan 24 th , 2019	N/A	N/A	N/A	N/A	140/82	167	N/A
April 18 th , 2019	6.7	N/A	N/A	N/A	161/94	183	N/A
July 10 th , 2019	N/A	N/A	N/A	N/A	140/90	233	N/A

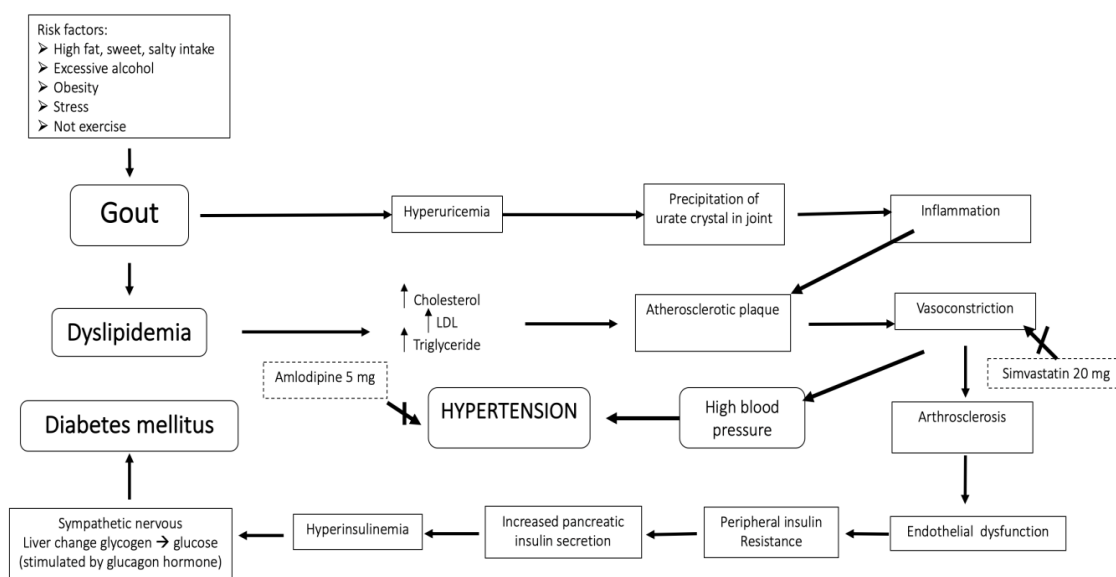


Figure 1 The development of health problem diagram

problem among people living in rural Thailand, it needs the cooperation from many organization and functions.

Boonprasan [13] reported that the HT development in Thai rural people stems from their culture related to food consumption, which is related to our study. Moreover, a case study had high body mass index, which was from his dietary behaviors and no exercise. This was consistent with the study of Legyam, et al. [14] which reported that rural people in Thailand had a problem of overweight due to lack of knowledge and poor attitude. In our study, we found that family and community roles were important for control of blood pressure and blood glucose level of a patient. Several studies reported family support had a positive impact on control of blood glucose among type 2 diabetes and on control of blood pressure among HT patients [15, 16, 17].

Since this is a case report which is selected from many complicated cases attending a NCD clinic in a hospital with long history in medical care and treatment, therefore, some medical records may not be complete. And also in the section of interview, some previous exposures or risk behaviors were not completely recalled.

Conclusion

Having HT and DM among the rural Thai people is becoming a common challenge with several driving factors including individual pathogenesis, personal behavior, family, and community. Living in a family with poor economic status with poor health behaviors puts many Thai rural people at risk for NCD particularly HT and DM. To address this certain problem, the cooperation among the health care givers who have different background such as medical doctor,

nurse, public health professional is needed to improve a patient approach skill which is focused on holistic care.

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