６．NIPPON DATA90 を用いた、喫煙習慣、血圧、BMI と健康寿命との関連

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【目的】日本人集団を代表するコホート研究である NIPPON DATA90 のデータを用い、喫煙習慣、血圧、BMI（Body Mass Index）が健康寿命に与える影響について、多相生命表を用いて本邦で初めて検討した。

【方法】全国規模のコホート研究 NIPPON DATA90 の 20 年追跡データを用い、喫煙・血圧・BMI の水準別における健康寿命を算定した。使用した情報は、1990 年のベースライン時の問診票情報（循環器疾患基礎調査）で、喫煙習慣（禁煙、現在喫煙）・血圧値（至適血圧、正常高値血圧、Ⅰ度高血圧、Ⅱ・Ⅲ度高血圧）、BMI（低体重：BMI（kg/m^2）18.5 未満、普通体重：BMI18.5 以上 25 未満、肥満：BMI25 以上）を用い、ADL データは 1995 年と 2000 年の調査で全て自立と回答した者を自立とした。これらの情報と多層生命表（iMach 0.98r7）を用いて、喫煙・血圧・肥満カテゴリ別の 60 歳時平均余命、60 歳時健康寿命を算出した。

【結果】肥満・血圧レベルによらず、非喫煙に比べて喫煙の 60 歳健康寿命は短い傾向を示した。また同一の肥満カテゴリ内では至適血圧から血圧レベルが上がるにつれて健康寿命が短くなる傾向がみられた（普通体重グループにおける喫煙と非喫煙の健康寿命の差（歳）：至適血圧：男性 2.7、女性 2.2、高血圧 1：男性 2.5、女性 2.1、高血圧 2：男性 2.4、女性 2.0、高血圧 3：男性 2.4、女性 2.0）。一方、低体重・肥満は適正体重と比べて、若干健康寿命が短く、やや逆 U 字型の傾向を示した。3 つの組み合わせで健康寿命の関連を見ると、男性の 60 歳時健康寿命では、非喫煙・至適血圧・普通体重グループは、22.9 歳であるのに対し、非喫煙・至適血圧・肥満グループは、22.5 歳と若干短くなるが、非喫煙・Ⅱ・Ⅲ度高血圧・肥満グループでは、20.0 歳と大きく短縮し、さらに喫煙・Ⅱ・Ⅲ度高血圧・肥満グループでは 17.7 歳と顕著に短縮したことから、喫煙と高血圧の影響が大きいことが明らかになった。

【結論】本研究により、日本人集団において、喫煙と高血圧が 60 歳時健康寿命に与える影響は大きいこと、同時に肥満および低体重の与える影響も喫煙や高血圧ほど大きくはないが、60 歳時健康寿命に影響を与えることが明らかになった。

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The relationship between healthy life expectancy and smoking, hypertension, and body mass index in a Japanese population: a multistate life table method using NIPPON DATA90

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Introduction

Healthy life expectancy (HLE) is an important measure for describing population health. Human factors such as smoking, hypertension, and obesity can reduce overall HLE in a population. Little is known about the relationship between HLE and cardiovascular risk factors in Asian populations. Our study aimed to estimate HLE in various combinations of cardiovascular risk factors in a Japanese population using a multistate life table approach.

Methods

Data were obtained from NIPPON DATA90, which is a nationwide cohort study of nine thousand Japanese people that was established in 1990. From among the NIPPON DATA90 participants, our analysis focused on people who were aged 60 years or older at the baseline survey and had received an activities of daily living (ADL) assessment. Participants underwent a two-wave interview survey process using the Katz ADL index in 1995 and 2000. The participants were queried on five items of the Katz ADL index, and any participant who answered that they were "not independent" for at least one item was designated "disabled" in the multistate life table. Smoking status was categorized into non-smokers (never-/ex-smokers) and current smokers. Blood pressure (BP) was categorized into four groups (optimal, normal, stage 1 hypertension, and stage 2 hypertension). Obesity was defined using body mass index (BMI), which was categorized into three groups (thin: 18.5; normal: 18.5–24.9; and overweight/obese: ≥25). All HLE calculations were performed using iMaCh version 0.98r7 (A Maximum Likelihood Computer Program using Interpolation of Markov Chains).

Results

The study sample comprised 6,676 participants (2,840 men and 3,836 women). Among all the BMI and BP groups, HLE at age 60 in current smokers was shorter than that of non-smokers. Among obese men with optimal BP, HLE in current smokers was 20.0 years, whereas that of non-smokers was 17.7 years. Among

obese current smokers, HLE at age 60 decreased linearly as BP increased in men (optimal BP: 19.8 years, normal BP: 19.3 years, stage 1 hypertension: 18.1 years, stage 2 hypertension: 17.7 years) and women (optimal BP: 23.1 years, normal BP: 22.6 years, stage 1 hypertension: 21.4 years, stage 2 hypertension: 21.0 years). Among thin current smokers, HLE at age 60 also decreased linearly as BP increased in men (optimal BP: 18.3 years, normal BP: 17.8 years, stage 1 hypertension: 16.6 years, stage 2 hypertension: 16.3 years) and women (optimal BP: 21.8 years, normal BP: 21.2 years, stage 1 hypertension: 19.9 years, stage 2 hypertension: 19.6 years). The distribution of HLE at age 60 showed a slight inverted U-shape as BMI increased in both sexes.

Conclusions

We examined the relationship between HLE at age 60 and combinations of BMI, BP, and smoking status using a nationwide cohort study of Japanese population. HLE at age 60 was clearly shorter in smokers and individuals with higher BP. Furthermore, both thin and obesity has a slight impact on HLE at age 60.