

Association Between Metabolic Syndrome And Chronic Periodontitis in Japanese Claims Database

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Introduction

Metabolic syndrome (MetS) is a condition caused by lifestyle and with dyslipidemia, type 2 diabetes mellitus, and hypertension. MetS is emphasized because of its association with other serious diseases like stroke. Chronic periodontitis (CP) is also caused by lifestyle and if progresses, affects non-oral diseases. Previous studies have reported interrelation with MetS, remained unclear.

This study aims to examine the association between MetS (dyslipidemia, type 2 diabetes mellitus, and hypertension) and CP in Japan.

Methods • Study population

Database : Cross Fact (claims database by INTAGE Real World Inc.)

Study period : January 2010~December 2019

Study population : Patients with at least one of confirmed diagnosis of MetS (dyslipidemia : E78, type 2 diabetes mellitus : E11~E14 and hypertension : I10~I15, by ICD-10) and didn't meet the exclusion criterion but met all inclusion criteria.

Outcome : Confirmed diagnosis of CP (K053 by ICD-10) and ≥ 180 days look back period without CP.

Patients with MetS(including not confirmed) in Cross Fact during study period

n = 1,887,799

▶ Patients who met all inclusion criteria

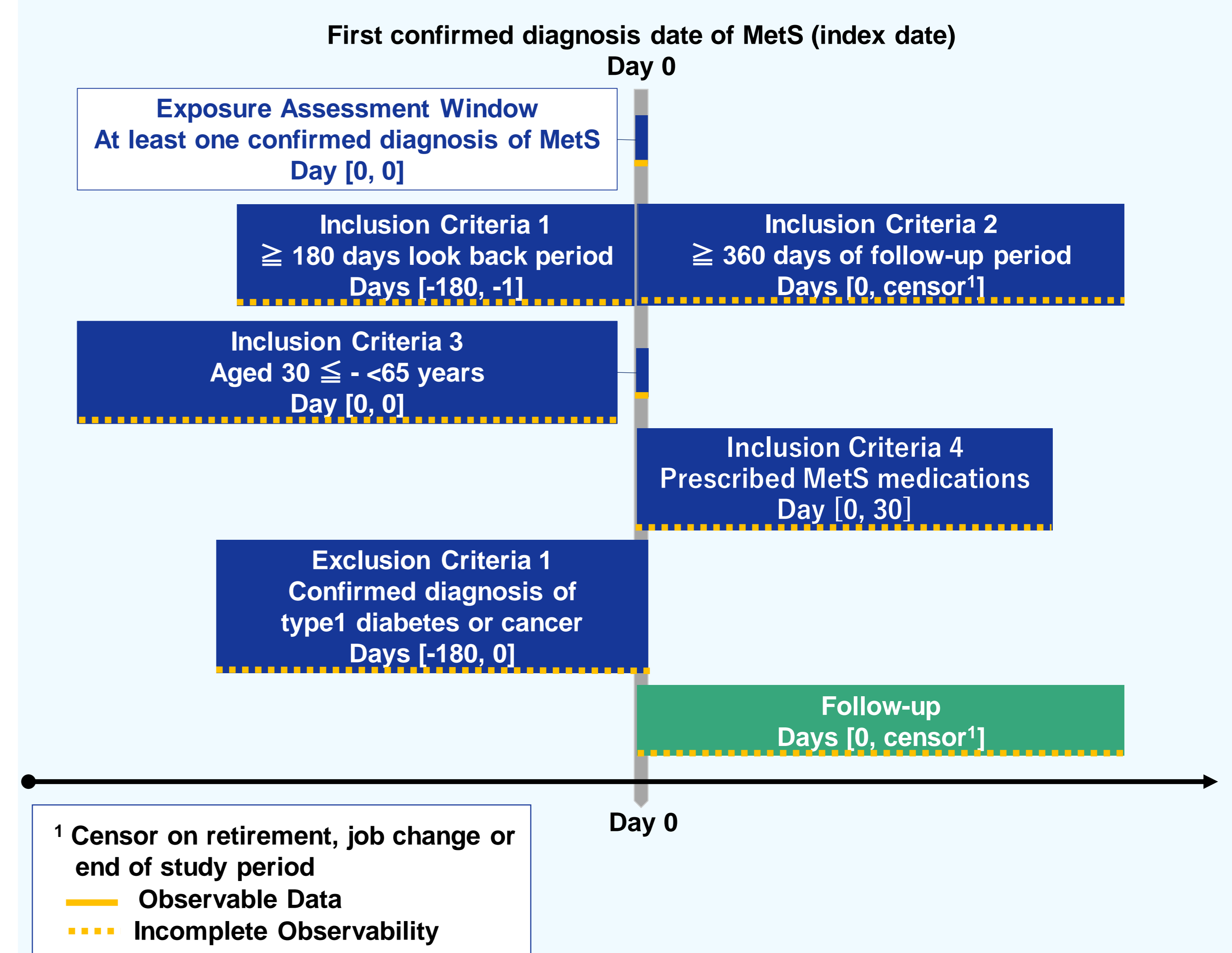
n = 191,576

▶ Patients in exclusion criterion

n = 37,855

▶ Patients analyzed

n = 153,721



Results

CP occurrence in MetS

	Type 2 diabetes mellitus			Hypertension			Dyslipidemia		
	Number of patients	with CP	% (95%CI)	Number of patients	with CP	% (95%CI)	Number of patients	with CP	% (95%CI)
	19,748	12,799	64.81 (64.14-65.48)	90,237	59,425	65.85 (65.54-66.16)	82,295	56,810	69.03 (68.71-69.35)
AGE									
30 \leq - < 35	916	563	61.46 (58.22-64.63)	2,913	1,904	65.36 (63.60-67.09)	2,785	1,836	65.92 (64.13-67.69)
35 \leq - < 40	1,509	980	64.94 (62.48-67.35)	5,463	3,636	66.56 (65.29-67.81)	5,142	3,466	67.41 (66.11-68.69)
40 \leq - < 45	2,483	1,547	62.30 (60.36-64.21)	10,805	7,011	64.89 (63.98-65.79)	9,367	6,344	67.73 (66.77-68.67)
45 \leq - < 50	3,614	2,387	66.05 (64.48-67.59)	17,501	11,478	65.58 (64.88-66.29)	14,264	9,926	69.59 (68.83-70.34)
50 \leq - < 55	4,717	3,189	67.61 (66.25-68.94)	23,709	16,262	68.59 (67.99-69.18)	22,077	15,835	71.73 (71.13-72.32)
55 \leq - < 60	4,913	3,194	65.01 (63.66-66.35)	22,294	14,696	65.92 (65.29-66.54)	21,941	15,192	69.24 (68.62-69.85)
60 \leq - < 65	1,596	939	58.83 (56.37-61.26)	7,552	4,438	58.77 (57.65-59.88)	6,719	4,211	62.67 (61.50-63.83)
SEX									
Male	13,119	8,244	61.46 (58.22-64.63)	52,000	32,940	63.35 (62.93-63.76)	43,019	28,559	66.39 (65.94-66.83)
Female	6,629	4,555	64.94 (62.48-67.35)	38,237	26,485	69.27 (68.80-69.73)	39,276	28,251	71.93 (71.48-72.37)

Diagnosed order for MetS and CP (MetS or CP, which was diagnosed first?)

Time Point	Type 2 diabetes mellitus with CP		Hypertension with CP		Dyslipidemia with CP	
	Number of patients	% (95%CI)	Number of patients	% (95%CI)	Number of patients	% (95%CI)
Male						
Before	4,166	50.53 (49.45-51.62)	15,622	47.43 (46.89-47.97)	13,666	47.85 (47.27-48.43)
After	4,074	49.42 (48.33-50.50)	17,296	52.51 (51.97-53.05)	14,883	52.11 (51.53-52.69)
Female						
Before	2,328	51.11 (49.65-52.57)	12,531	47.31 (46.71-47.92)	13,371	47.33 (46.75-47.91)
After	2,224	48.83 (47.36-50.29)	13,935	52.61 (52.01-53.22)	14,861	52.60 (52.02-53.19)

* "Before" and "After" represent the time point CP occurred from MetS as the center point.

- About 65 % of MetS patients had CP. Especially 50 \leq - < 55 years old showed high CP occurrence.
- Female showed higher CP proportion compared to male, as previous studies have reported similarly.
- Dyslipidemia showed higher CP proportion than other two MetS.
 - ▶ CP was more diagnosed after Dyslipidemia, both in female and male, which indicated sex was not enough explanation to CP occurrence.

Discussion

- Among MetS patients, CP occurrence was higher than the survey conducted by Ministry of Health, Labour and Welfare.
- Female showed higher CP proportion than male as previous studies reported.
- Dyslipidemia patients showed high CP occurrence, contrary to conducted reports which type 2 diabetes was treated as a higher risk. Dyslipidemia and CP are known in relation to female hormones, however, there was no obvious association between CP and sex.
- Sociographical characteristics like smoking and eating habits weren't considered due to the property of CrossFact.
- Further research is required to explore the factors affect high CP occurrence in dyslipidemia.