SUPPLEMENTAL MATERIALS

Hypertension, Arterial stiffness, and Diabetes: A Prospective Cohort Study

Short title: Hypertension, Arterial stiffness, and Diabetes

Authors

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Supplemental Tables

Table S1. Age- and Sex- specific cutoff point of arterial stiffness measured by baPWV

Age stratification	Men	Women
<30 yr	1248 cm/s	1080 cm/s
30-39 yr	1345 cm/s	1162 cm/s
40-49 yr	1407 cm/s	1264 cm/s
50-59 yr	1457 cm/s	1386 cm/s
60-69 yr	1589 cm/s	1581 cm/s
≥70 yr	1898 cm/s	1874 cm/s

Abbreviations: baPWV, brachial-ankle pulse wave velocity.

Table S2. Baseline characteristics of included participants and excluded participants due to missing information

Characteristics	Excluded	Included	ASD/HL estimator, %
Participants	9306	11156	
Age, years	47.91±15.50	51.53±11.62	26.42
Men, n (%)	5899 (63.79)	6380 (57.19)	22.03
Body mass index, kg/m^2	25.23±3.46	24.80±3.40	9.49
Heart rate, bpm	73.40±11.24	72.70±9.89	6.05
baPWV, cm/s	1523.59±365.46	1492.83±350.64	8.59
Current smoker, n (%)	1522 (19.55)	3063 (27.46)	18.73
Current drinker, n (%)	1616 (20.76)	3355 (30.07)	21.53
Dyslipidemia, n (%)	342 (4.39)	726 (6.51)	9.33
Total cholesterol, mmol/L	4.97±1.64	4.99±1.68	1.18
Triglyceride, mmol/L	1.30(0.86-2.12)	1.23(0.87-1.84)	6.23
LDL-C, mmol/L	2.60±1.08	2.54±0.79	6.22
HDL-C, mmol/L	1.55±0.66	1.58±0.48	3.11
Serum uric acid, μmol/L	292.12±89.93	284.74±89.00	9.31
Hs-CRP, mg/L	1.20(0.60-2.40)	1.12(0.47-2.05)	5.60
eGFR, ml/min/1.73m^2	92.21±23.05	93.44±19.75	5.70

Abbreviations: ASD, absolute standardized difference; baPWV, brachial-ankle pulse wave velocity; eGFR, estimated glomerular filtration rate; HDL-C, high density lipoprotein cholesterol; HL estimator: Hodges-Lehmann estimator; hs-CRP, high sensitivity C-reactive protein; HTAS, hypertension with elevated arterial stiffness;

HTNAS, hypertension with normal arterial stiffness; IVF, ideal vascular function; LDL-C, low density lipoprotein cholesterol; NTAS, normotension with elevated arterial stiffness.

Continuous variables were expressed as mean ± standard deviation or median with interquartile, categorical variables were expressed as frequency with proportion. Given the large study population in our study, $P<0.05$ in the comparison indicates statistical significance but may not mean clinical significance. Therefore, baseline characteristics between excluded and included participants were compared with ASD for means or percentages, and HL estimator for medians, the indicator >10% is approximately equivalent to *P* value less than 0.05, indicating a significant imbalance.

Table S3. Cox analysis of different hypertension and arterial stiffness status using 130/80mmHg as cut-off point

Outcomes	IVF	NTAS	HTNAS	HTAS	*P* for trend
Cases, (%)	64 (2.63)	49 (5.88)	135 (4.82)	520 (10.21)	
Model 1	Reference	2.11(1.46-3.07)	1.80(1.34-2.42)	3.82(2.95-4.96)	<0.0001
Model 2	Reference	1.94(1.32-2.84)	1.30(0.95-1.76)	2.54(1.90-3.39)	<0.0001
Model 3	Reference	1.93(1.31-2.83)	1.26(0.93-1.72)	2.45(1.84-3.27)	<0.0001

Abbreviations: HTAS, hypertension with elevated arterial stiffness; HTNAS, hypertension with normal arterial stiffness; IVF, ideal vascular function; NTAS, normotension with elevated arterial stiffness.

Model 1: unadjusted;

Model 2: adjusted for age, sex, body mass index, heart rate, smoking status, and alcohol consumption;

Model 3: further adjusted for dyslipidemia, total cholesterol, low density lipoprotein cholesterol, high density lipoprotein cholesterol, serum uric acid, high sensitivity C-reactive protein, and estimated glomerular filtration rate.

Table S4. Cox analysis of different hypertension and arterial stiffness status using an age- and sex- specific cut-off point

Outcomes	IVF	NTAS	HTNAS	HTAS	*P* for trend
Cases, (%)	141 (3.49)	205 (6.68)	83 (7.14)	339 (11.70)	
Model 1	Reference	2.04(1.65-2.53)	2.02(1.54-2.64)	3.35(2.75-4.08)	<0.0001
Model 2	Reference	1.87(1.50-2.32)	1.33(1.00-1.75)	2.23(1.81-2.74)	<0.0001
Model 3	Reference	1.83(1.47-2.27)	1.29(0.97-1.70)	2.17(1.77-2.68)	<0.0001

Abbreviations: HTAS, hypertension with elevated arterial stiffness; HTNAS, hypertension with normal arterial stiffness; IVF, ideal vascular function; NTAS, normotension with elevated arterial stiffness;

Model 1: unadjusted;

Model 2: adjusted for age, sex, body mass index, heart rate, smoking status, and alcohol consumption;

Model 3: further adjusted for dyslipidemia, total cholesterol, low density lipoprotein cholesterol, high density lipoprotein cholesterol, serum uric acid, high sensitivity C-reactive protein, and estimated glomerular filtration rate.

Table S5. Cox analysis of different hypertension and arterial stiffness status by excluding diabetes within the first 1-year follow-up

Outcomes	IVF	NTAS	HTNAS	HTAS	*P* for trend
Cases, (%)	129 (2.94)	195 (7.28)	59 (7.05)	337 (10.59)	
Model 1	Reference	2.45(1.96-3.06)	2.30(1.69-3.14)	3.46(2.82-4.24)	<0.0001
Model 2	Reference	2.17(1.72-2.75)	1.57(1.14-2.16)	2.49(1.97-3.13)	<0.0001
Model 3	Reference	2.13(1.68-2.70)	1.52(1.10-2.09)	2.42(1.92-3.06)	<0.0001

Abbreviations: HTAS, hypertension with elevated arterial stiffness; HTNAS, hypertension with normal arterial stiffness; IVF, ideal vascular function; NTAS, normotension with elevated arterial stiffness;

Model 1: unadjusted;

Model 2: adjusted for age, sex, body mass index, heart rate, smoking status, and alcohol consumption;

Model 3: further adjusted for dyslipidemia, total cholesterol, low density lipoprotein cholesterol, high density lipoprotein cholesterol, serum uric acid, high sensitivity C-reactive protein, and estimated glomerular filtration rate.

Table S6. Cox analysis of different hypertension and arterial stiffness status using competing risk model

Outcomes	IVF	NTAS	HTNAS	HTAS	*P* for trend
Cases, (%)	138 (3.14)	208 (7.69)	61 (7.27)	361 (11.20)	
Model 1	Reference	2.36(1.90-2.93)	2.22(1.64-3.00)	3.36(2.76-4.09)	<0.0001
Model 2	Reference	2.16(1.71-2.72)	1.51(1.11-2.07)	2.50(1.99-3.14)	<0.0001
Model 3	Reference	2.12(1.68-2.68)	1.48(1.08-2.03)	2.43(1.93-3.07)	<0.0001

Abbreviations: HTAS, hypertension with elevated arterial stiffness; HTNAS, hypertension with normal arterial stiffness; IVF, ideal vascular function; NTAS, normotension with elevated arterial stiffness;

Model 1: unadjusted;

Model 2: adjusted for age, sex, body mass index, heart rate, smoking status, and alcohol consumption;

Model 3: further adjusted for dyslipidemia, total cholesterol, low density lipoprotein cholesterol, high density lipoprotein cholesterol, serum uric acid, high sensitivity C-reactive protein, and estimated glomerular filtration rate.

Table S7. Association of different hypertension and arterial stiffness status with risk of diabetes with new definition

Outcomes	IVF	NTAS	HTNAS	HTAS	*P* for trend
Cases, (%)	134 (3.05)	188 (6.95)	58 (6.92)	333 (10.36)	
Model 1	Reference	2.42(1.95-3.01)	2.22(1.64-3.00)	3.46(2.84-4.20)	<0.0001
Model 2	Reference	2.13(1.70-2.68)	1.50(1.10-2.06)	2.45(1.95-3.08)	<0.0001
Model 3	Reference	2.10(1.66-2.64)	1.46(1.07-2.01)	2.40(1.90-3.02)	<0.0001

Abbreviations: HTNAS, hypertension with normal arterial stiffness; HTMAS, hypertension with moderate arterial stiffness; HTSAS, hypertension with severe arterial stiffness; IVF, ideal vascular function; NTMAS, normotension with moderate arterial stiffness; NTSAS, normotension with severe arterial stiffness.

Model 1: unadjusted;

Model 2: adjusted for age, sex, body mass index, heart rate, smoking status, and alcohol consumption;

Model 3: further adjusted for dyslipidemia, total cholesterol, low density lipoprotein cholesterol, high density lipoprotein cholesterol, serum uric acid, high sensitivity C-reactive protein, and estimated glomerular filtration rate.

Table S8. Association of different hypertension and arterial stiffness status with risk of diabetes

	IVF	NTMAS	NTSAS	HTNAS	HTMAS	HTSAS
Case, n (%)	138 (3.14)	157(7.18)	51(9.85)	61(7.28)	197(10.07)	164(13.06)
Model 1	Reference	2.29(1.82-2.88)	3.06(2.22-4.22)	2.22(1.64-3.00)	3.13(2.52-3.88)	3.97(3.16-4.98)
Model 2	Reference	2.08(1.64-2.64)	2.89(2.04-4.10)	1.52(1.12-2.08)	2.21(1.74-2.80)	3.29(2.52-4.29)
Model 3	Reference	2.06(1.62-2.61)	2.78(1.96-3.95)	1.48(1.08-2.02)	2.16(1.70-2.74)	3.21(2.46-4.19)

Abbreviations: HTNAS, hypertension with normal arterial stiffness; HTMAS, hypertension with moderate arterial stiffness; HTSAS, hypertension with severe arterial stiffness; IVF, ideal vascular function; NTMAS, normotension with moderate arterial stiffness; NTSAS, normotension with severe arterial stiffness.

Model 1: unadjusted;

Model 2: adjusted for age, sex, body mass index, heart rate, smoking status, and alcohol consumption;

Model 3: further adjusted for dyslipidemia, total cholesterol, low density lipoprotein cholesterol, high density lipoprotein cholesterol, serum uric acid, high sensitivity C-reactive protein, and estimated glomerular filtration rate.

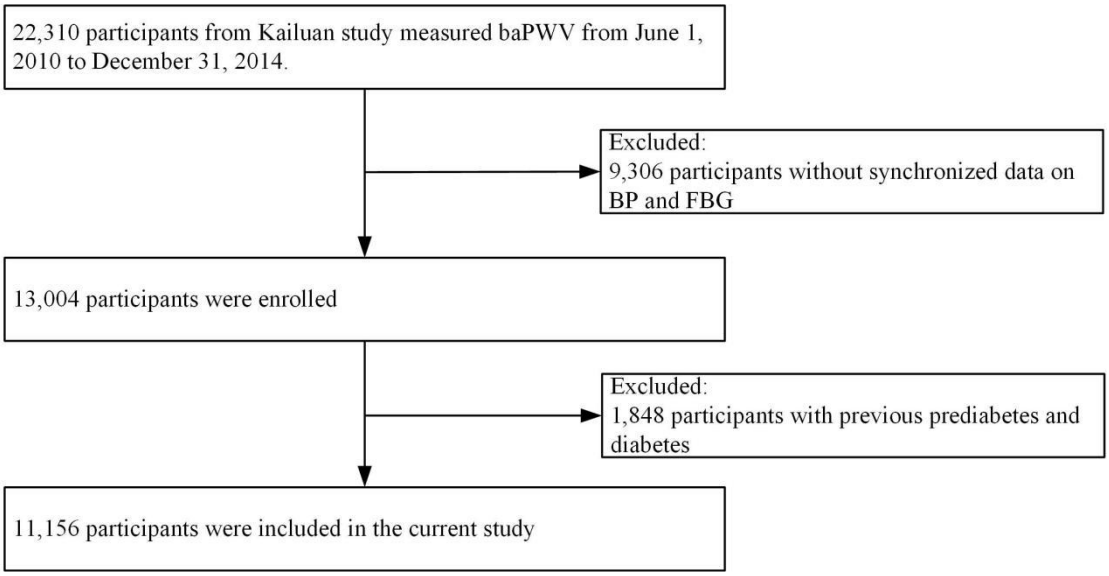

Figure S1. Flowchart of the study

Abbreviations: BP, blood pressure; FBG, fasting blood glucose.