

Inclusion of plasma prolactin levels in current risk prediction models of premenopausal and postmenopausal breast cancer

Supplemental results

Table S1. Geometric mean of prolactin levels (ng/mL), multivariable linear regression estimates and *P*-values, for established risk factors for breast cancer in premenopausal cases and controls.

	Premenopausal women Cases			Premenopausal women Controls			Difference between regression coefficients <i>P</i> -value ^c		
	n	Geometric mean ^a	Estimates (SE) ^b	<i>P</i> - value ^b	n	Geometric mean ^a		Estimates (SE) ^b	<i>P</i> - value ^b
Age at blood draw, (y) ^d	236		0.018 (0.009)	0.053	407		0.004 (0.007)	0.500	0.222
<47	118	16.5			187	14.7			
≥47	118	17.8			220	15.8			
BMI at study entry, (kg/m ²) ^e	236		0.019 (0.011)	0.078	407		0.003 (0.007)	0.714	0.184
<25	144	16.4			243	15.0			
25-29	69	16.9			117	16.4			
≥30	23	23.2			47	14.3			
Age at menarche, (y)	232		0.003 (0.029)	0.919	401		-0.030 (0.021)	0.155	0.348
<13	94	17.8			142	15.1			
13	66	15.8			123	16.9			
≥14	72	17.5			136	14.2			
Ever use of oral contraceptives	234		-0.181 (0.141)	0.202	407		0.107 (0.112)	0.341	0.104
No	22	20.2			27	13.8			
Yes	212	16.9			380	15.4			
Number of pregnancies	233		-0.040 (0.026)	0.118	406		-0.052 (0.017)	0.002	0.686
0	21	19.0			38	21.1			
1	18	27.7			34	15.1			
2	83	17.5			128	15.1			
≥3	111	15.3			206	14.5			
Parity	233		-0.180 (0.113)	0.114	406		-0.264 (0.078)	0.001	0.531
Nulliparous	35	20.0			59	19.2			
Parous	198	16.7			347	14.7			
Number of births	233		-0.145 (0.042)	0.001	406		-0.091 (0.029)	0.002	0.279
Nulliparous	35	20.0			59	19.2			
1	31	21.7			62	15.2			
2	120	17.1			190	14.9			
≥3	47	13.3			95	14.1			
Age at first birth, (y)	198		-0.015 (0.009)	0.087	347		0.007 (0.006)	0.295	0.038
<25	46	17.6			71	14.0			
25-29	70	17.6			128	14.5			
≥30	82	15.5			148	15.3			
Minimum duration of breastfeeding, (m)	185		-0.012 (0.005)	0.015	316		-0.002 (0.003)	0.558	0.063

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Never (parous)	0			3	13.4				
<18	85	18.4		132	15.7				
≥18	100	15.0		181	14.4				
Ever use of HRT	229		-0.017 (0.143)	0.902	401		-0.168 (0.092)	0.068	0.360
No	208	17.1			359	15.6			
Yes	21	16.8			42	13.2			
Alcohol consumption, (g/week)	232		0.000 (0.001)	0.788	405		0.000 (0.001)	0.332	0.772
<5	44	17.5			81	15.6			
5-14	25	15.8			56	14.4			
≥15	163	17.3			268	15.4			
Smoking status	230		-0.064 (0.057)	0.264	406		-0.105 (0.040)	0.009	0.538
Never smoked	115	17.3			226	16.1			
Past smoker	81	18.4			134	14.8			
Current smoker	34	14.1			46	12.9			
History of benign breast disorder	226		-0.054 (0.095)	0.569	401		0.001 (0.073)	0.991	0.637
No	163	17.5			328	15.4			
Yes	63	16.6			73	15.4			
Family history of breast cancer	228		0.096 (0.096)	0.319	394		-0.078 (0.080)	0.332	0.157
No	172	16.7			337	15.4			
Yes	56	18.4			57	14.2			
Family history of ovarian cancer	225		0.084 (0.192)	0.661	382		0.276 (0.157)	0.080	0.430
No	214	17.0			369	15.2			
Yes	11	18.5			13	20.0			

Abbreviations: BMI, body mass index; HRT, hormone replacement therapy; SE, standards error.

^a Adjusted for age and BMI at blood draw.

^b Based on independent variables (continuous) adjusted for age and BMI and natural log-transformed prolactin (ng/mL) (continuous) as dependent variable.

^c Test of difference by Wald statistic.

^d Adjusted for BMI at blood draw.

^e Adjusted for age at blood draw.

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Table S2. Geometric mean of prolactin levels (ng/mL), multivariable linear regression estimates and *P*-values, for established risk factors for breast cancer in postmenopausal cases and controls.

	Postmenopausal women Cases			Postmenopausal women Controls			Difference between regression coefficients <i>P</i> -value ^c		
	n	Geometric mean ^a	Estimates (SE) ^b	<i>P</i> - value ^b	n	Geometric mean ^a		Estimates (SE) ^b	<i>P</i> - value ^b
Age at blood draw, (y) ^d	482		-0.008 (0.004)	0.042	977		-0.006 (0.003)	0.034	0.626
>64	206	11.9			402	11.8			
≥64	276	11.0			575	10.9			
BMI at study entry, (kg/m ²) ^e	482		-0.005 (0.006)	0.355	977		0.001 (0.004)	0.775	0.362
<25	219	12.1			482	11.2			
25-29	179	10.7			363	11.4			
≥30.0	84	11.0			132	11.1			
Age at menarche, (y)	471		0.023 (0.018)	0.194	953		-0.021 (0.012)	0.091	0.045
<13	150	11.2			290	11.7			
13	134	10.5			250	11.6			
≥14	187	12.1			413	10.9			
Ever use of oral contraceptives	467		-0.025 (0.061)	0.675	958		-0.029 (0.045)	0.517	0.963
No	117	11.6			210	11.6			
Yes	350	11.3			748	11.2			
Number of pregnancies	473		-0.013 (0.017)	0.466	976		-0.010 (0.012)	0.406	0.911
0	41	11.6			74	11.9			
1	58	10.9			106	11.6			
2	176	11.2			333	11.2			
≥3	198	11.5			463	11.1			
Parity	473		-0.022 (0.079)	0.776	976		-0.093 (0.058)	0.113	0.476
Nulliparous	57	11.6			103	12.3			
Parous	416	11.3			873	11.2			
Number of births	473		-0.015 (0.028)	0.600	976		-0.016 (0.020)	0.402	0.959
Nulliparous	57	11.6			103	12.3			
1	81	12.0			155	11.5			
2	228	11.0			454	10.8			
≥3	107	11.5			264	11.6			
Age at first birth, (y)	416		0.005 (0.006)	0.329	873		0.004 (0.004)	0.338	0.810
<25	171	10.8			380	11.3			
25-29	158	11.9			335	10.9			
≥30	87	11.3			158	11.5			
Minimum duration of breastfeeding, (m)	399		-0.003 (0.003)	0.355	840		-0.001 (0.002)	0.438	0.737
Never (parous)	19	12.2			28	11.4			
<18	237	11.1			480	11.1			

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≥18	143	11.2			332	11.2			
Age at menopause	263		0.000 (0.007)	0.998	500		-0.005 (0.005)	0.292	0.558
<50	106	11.9			201	12.2			
50-54	110	11.3			245	11.9			
≥55	266	11.2			531	10.7			
Ever use of HRT	475		0.036 (0.052)	0.483	970		0.058 (0.036)	0.110	0.731
No	241	11.2			527	11.0			
Yes	234	11.6			443	11.6			
Alcohol consumption, (g/week)	473		0.000 (0.000)	0.564	970		0.000 (0.000)	0.451	0.356
<5	83	12.4			201	11.2			
5-14	56	10.4			148	10.8			
≥15	334	11.3			621	11.4			
Smoking status	472		-0.041 (0.037)	0.271	974		-0.049 (0.026)	0.062	0.850
Never smoked	180	11.9			429	11.6			
Past smoker	217	11.0			420	11.3			
Current smoker	75	11.2			125	10.2			
History of benign breast disorder	465		-0.009 (0.056)	0.867	960		-0.014 (0.043)	0.744	0.948
No	319	11.4			733	11.4			
Yes	146	11.3			227	11.2			
Family history of breast cancer	470		-0.040 (0.060)	0.503	949		-0.040 (0.048)	0.397	0.999
No	352	11.5			782	11.3			
Yes	118	11.0			167	10.9			
Family history of ovarian cancer	455		0.161 (0.121)	0.181	930		-0.018 (0.091)	0.845	0.237
No	433	11.2			890	11.3			
Yes	22	13.1			40	11.1			

Abbreviations: BMI, body mass index; HRT, hormone replacement therapy; SE, standards error.

^a Adjusted for age and BMI at blood draw.

^b Based on independent variables (continuous) adjusted for age and BMI and natural log-transformed prolactin (ng/mL) (continuous) as dependent variable.

^c Test of difference by Wald statistic.

^d Adjusted for BMI at blood draw.

^e Adjusted for age at blood draw.

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Table S3. Multivariable adjusted odds ratios, comparing top and bottom quintals, for risk of breast cancer as a function of tumour characteristics, for pre- and postmenopausal women.

Case group	Premenopausal women ^a				Postmenopausal women ^b			
	<i>n</i> cases/ controls	OR	95% CI	<i>P</i> -value trend ^c	<i>n</i> cases/ controls	OR	95% CI	<i>P</i> -value trend ^c
Diagnose <2 yr	175/381	2.211	1.221 to 4.004	0.003	274/904	1.179	0.735 to 1.891	0.821
Diagnose ≥2 yr	36/381	0.936	0.344 to 3.188	0.719	163/904	0.782	0.550 to 1.567	0.896
ER+ cases	163/381	1.926	1.065 to 3.483	0.016	335/904	1.059	0.693 to 1.618	0.778
PR+ cases	148/381	1.752	0.941 to 3.261	0.046	268/904	0.928	0.587 to 1.465	0.981
Tumour <20mm	159/381	2.124	1.149 to 3.927	0.001	332/904	0.978	0.640 to 1.493	0.716
Tumour ≥20mm	52/381	1.412	0.552 to 3.611	0.753	102/904	1.361	0.689 to 2.690	0.386
Invasive cases	172/381	2.099	1.154 to 3.820	0.010	368/904	1.027	0.686 to 1.537	0.991

* ORs comparing median hormone levels (ng/mL) in top quintile to median level in bottom quintile.

^a Adjusted for age and BMI at blood draw, benign breast disorder (no, yes), breast cancer in family (no, yes), smoking status (never, previous, or current smoker), age at menarche and number of births (0, 1, 2 or ≥3).

^b Adjusted for age and BMI at blood draw, benign breast disorder (no, yes), breast cancer in family (no, yes), smoking status (never, previous, or current smoker), age at menarche, number of births (0, 1, 2 or ≥3), and ever use of hormone replacement therapy.

^c *P*-value based on Wald test on natural log-transformed prolactin (ng/mL), continuous.