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The Impact of Psoriasis on Ten-Year Framingham Risk

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Psoriasis is a chronic inflammatory skin disease, and when severe, may be a risk factor for major adverse cardiac events (MACE) including myocardial infarction¹, stroke and cardiovascular (CV) death. Indeed, recent studies evaluating the risk of MACE with IL-12/23 inhibitors in randomized trials emphasize the need for efforts at decreasing the risk of cardiovascular disease in psoriasis patients.² Risk stratification and treatment goals for cholesterol and blood pressure in psoriasis remains understudied, and the Framingham Risk score (FRS) for CV risk may underestimate long term risk of MACE in psoriasis patients. The Adult Treatment Panel for lipid management recommends that providers consider emerging risk factors when deciding on lipid treatment but does not provide specific guidelines. We described an initial estimate of this excess attributable risk of severe psoriasis on MACE³ and herein describe how this AR may affect FRS in psoriasis. We consecutively enrolled patients (n=138), and calculated FRS before and after adding the AR of psoriasis (6.2%)³, and estimated the reclassification rate by examining patients moved from a lower risk category to a higher risk category.

Patients with psoriasis were relatively young with higher than expected tobacco use, alcohol use, body mass index and lipids (Table 1). Nonetheless, their risk for MACE by FRS was low (<10%) (male mean FRS 7.4 ± 7.75 , female 5.9 ± 5.86), attributable to their young age. After considering the estimated AR, (mean FRS 13.36 ± 7.10 , male 13.92 ± 7.77 , female 12.48 ± 5.86), the majority of patients were re-classified to a higher-risk category: 73% (95% CI 61.5%–82.3%) of low risk patients were reclassified as intermediate, and 53% (95% CI 36.4%–64.1%) of intermediate risk patients were reclassified as high risk (Table 2). These findings suggest that adding the estimated AR of psoriasis on MACE to the FRS results in clinically important changes in prevention strategies³.

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Conflict of Interest

The other authors confirm that there are no other potential conflicts of interest.

Due to the young age of our population, the majority of patients were in the low risk category, which would not warrant aggressive risk reduction strategies. However, when considering an AR estimate of MACE, the majority of our patients were reclassified into the intermediate risk category which *would* warrant change in treatment plans and goals for over 60% of our patients (Table 2), an important finding in this population potentially at higher risk for CV disease with increased subclinical vascular inflammation⁴.

We recognize this proof of concept study is limited by the generalizability of UK data to a US population. However, guidelines for identifying CVD risk factors are similar. Secondly, our AR was derived in severe psoriasis defined by treatment with systemic therapy or phototherapy; similarly, over 80% of our patients had been exposed to these therapies permitting this estimate to be applicable in this proof of concept study.

The major implication of these findings is that patients with psoriasis may warrant more aggressive control of established CV risk factors. Measures to decrease CV risk include lifestyle and dietary education through targeted counseling. The percentage of these patients requiring drug interventions such as statins and anti-hypertensive is unknown but likely to be small. Finally, this illustration provides a quantitative approach for CV risk estimation in psoriasis, an approach gaining acceptance in the care of patients with rheumatoid arthritis⁵.

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List of Abbreviations

MACE Major adverse cardiac events

CV	Cardiovascular
FRS	Framingham risk score
AR	Attributable risk
CVD	Cardiovascular disease

Table 1

Demographic characteristics of study sample

Variables	Total n=138	Men n=85	Women n=53
	Median (IQR)	Median (IQR)	Median (IQR)
Age in years	44 (35–55)	41 (33–53)	50 (40–57)
Diabetes (%)	13 (9.3)	7 (8.1)	6 (11.1)
Tobacco use (%)	55 (39.8)	30 (35.2)	25 (47.1)
Family history of CAD* (%)	81 (59.1)	49 (58.3)	32 (60.3)
Alcohol use (%)	93 (67.3)	64 (75.2)	29 (54.7)
Systolic blood pressure	123 (112–136)	125 (112–135)	122 (112–136)
Diastolic blood pressure	80 (72–86)	80 (75–86)	80 (72–86)
Total cholesterol mg/dl	184 (157–218)	179 (154–206)	190 (160–223)
LDL cholesterol mg/dl	108 (87–138)	108 (90–138)	108 (85–132)
HDL cholesterol mg/dl	44.5 (38–55)	41 (37–49)	55 (39–63)
Triglycerides mg/dl	107 (79–155)	104 (78–155)	107 (81–152)
Non HDL cholesterol mg/dl	134 (110.5–172)	136 (109–164)	134 (113–172)
VLDL cholesterol mg/dl	29 (21–40)	35 (27–43)	23.5 (16–35)
Lipoprotein A	12.1 (6–27.8)	11 (4.6–31)	13.4 (8.15–22)
Homocysteine (umol/l)	10.3 (8–12.9)	11.2 (8.5–14.7)	9.2 (7.7–10.9)
C reactive protein (mg/l)	2.4 (0.56–7.9)	1.5 (0.3–4.4)	4.7 (1.5–12.7)
ESR (mm/hr)	8 (3–17)	3 (2–10)	12 (7–22)
Glucose mg/dl	91 (85–104)	88 (82–99)	96 (87–117)
Body mass index	28.4 (24.8–33.5)	27.3 (24.8–31.2)	29.1 (26.5–36.5)
Waist circumference (inches)	38.7 (34.3–43)	38 (34.5–43)	40 (33–43)
Waist to Hip Ratio	0.93 (0.87–0.97)	0.93 (0.9–1)	0.87 (0.84–0.93)
Metabolic Syndrome (%)	51 (39.5)	31 (37.8)	20 (42.5)
Family history of Diabetes (%)	28 (20.44)	19 (22.6)	9 (16.9)
Myocardial Infarction (%)	6 (4.3)	5 (5.8)	1 (1.8)
Ten Year Framingham Risk			

Variables	Total n=138	Men n=85	Women n=53
	Median (IQR)	Median (IQR)	Median (IQR)
percent event (LDL–Cholesterol)	Mean (±SD)	Mean (±SD)	Mean (±SD)
without Psoriasis risk added	6.8 (±7.10)	7.4 (±7.75)	5.9 (±5.86)
with Psoriasis risk added	13.36 (±7.10)	13.92 (±7.77)	12.48 (±5.86)
Psoriasis Severity** (Body surface area involvement)			
Low (<2%)	26 (24.3%)	12 (18.4%)	14 (33%)
Intermediate (2–10%)	58 (54.2%)	38 (58.4%)	20 (48%)
Severe (>10%)	23 (21.5%)	15 (23.1%)	8 (19%)
Psoriasis Therapy***			
Topical only	21 (15.2%)		
Ever Systemic therapy^	78 (56.5%)		
Ever Phototherapy	86 (62.3%)		

* CAD: Coronary artery disease

** available in 80% of the population

*** patient could be in more than one group

^ defined as biologic or oral methotrexate, cyclosporine, acitretin therapy

Table 2

Category of risk before and after adding psoriasis attributable risk with treatment goals

Category	Baseline risk			Modified risk			Treatment Goals*	
	Total n=138	Male n=85	Female n=53	Total n=138	Male n=85	Female n=53	LDL (mg/dl)	Blood Pressure (mm Hg)
Low	111	66	45	46	21	25	<160	<140/90
Intermediate	21	15	6	79	56	23	<130	<130/80
High	6	4	2	13	8	5	<100	<120/80

* Adult Treatment Panel III in conjunction with the Joint National Congress for Blood Pressure management Executive Summary ²