Body composition changes in patients with psoriatic disease: a cross-sectional analysis of the UK Biobank cohort

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INTRODUCTION

Body composition has rarely been evaluated in patients with **psoriatic arthritis** (PsA) or **psoriasis** (PsO).

AIM

Our objective was to **compare body composition** in patients with **PsA**, **PsO**, and **non-psoriatic controls** (NPC).

METHOD

- Cross-sectional study from data collected between 2013 and 2016 from UK Biobank participants.
- Self-report, primary care and hospital records used to identify participants with PsO alone or PsA.
- All participants underwent an abdominal MRI scan and abdominal body composition outputs were derived, including:
  - Liver proton density fat fraction (PDFF),
  - Visceral adipose tissue index (VATi, i.e. VAT/height²),
  - Abdominal subcutaneous adipose tissue index (ASATi, i.e. ASAT/height²),
  - Muscle fat infiltration (MFI),
  - Abdominal fat ratio (AFR, i.e. total abdominal fat volume/total abdominal fat volume and thigh muscle volume)
  - Total abdominal adipose tissue index (TAATI, i.e. ASAT+VAT/height²).
- The association between each clinical group, relative to non-psoriatic controls, and body composition was modelled using multinomial logistic regression, with the exposure defined per 1-standard deviation increase in each MRI variable

RESULTS

- Amongst **35,349** participants with valid MRI abdominal composition data, we identified **841** with PsO and **125** with PsA.
- Population characteristics are described in **Table 1**.
- The overall population's mean (SD) age was 64.3 (7.5) years.
- The **majority of patients** with PsO (50.8%) and NPC (52.9%) were **female**, **except** for patients with PsA (48%).
- The **majority** of the participants across of all groups had a body mass index<30kg/m².
- In multivariable models, a **diagnosis of PsO** was associated with:
  - **Liver PDFF** (Odds ratio (OR);1.12; 95% confidence interval (CI), 1.05-1.20),
  - **VATi** (OR, 1.20; 95%CI 1.11-1.30)
  - **ASATi** (OR=1.19; 95%CI 1.09-1.28)
  - **MFI** (OR=1.09, 95% CI 1.02-1.17)
  - **AFR** (OR=1.21, 95%CI 1.11-1.30)
  - **TAATI** (OR=1.19; 95%CI 1.10-1.28) compared to **NPC**.
- A **diagnosis of PsA** was associated with
  - **liver PDFF** (OR= 1.19, 95% CI 1.01-1.41)
  - **MFI** (OR=1.28, 95% CI 1.09-1.49)
  - **AFR** (OR=1.30, 95% CI 1.05-1.59) compared to **NPC**.

Table 1: Population characteristics

	Non-psoriatic controls N = 34,383	Psoriasis N = 841	PsA N = 125	Overall N = 35,349
Age (years)	64.3 (7.5)	64.3 (7.5)	64.2 (6.5)	64.3 (7.5)
Female	18,149 (52.9%)	427 (50.8%)	60 (48%)	18,636 (52.7%)
White ethnicity	33,237 (96.7%)	813 (96.7%)	121 (96.8%)	34,171 (96.7%)
Townsend Deprivation Index				
Least Deprived	18,491 (53.8%)	447 (53.2%)	61 (48.8%)	18,999 (53.7%)
Most Deprived	888 (2.6%)	28 (3.3%)	5 (4.0%)	921 (2.6%)
Smoking status				
Never	21118 (61.4%)	433 (51.5%)	73 (57.9%)	21,624 (61.2%)
Previous	11,149 (32.4%)	331 (39.4%)	46 (36.8%)	11,526 (32.6%)
Current	2116 (6.2%)	77 (9.2%)	6 (4.8%)	2199 (6.2%)
Frequency of alcohol consumption				
Never	1,616 (4.7%)	49 (5.8%)	12 (9.6%)	1,677 (4.7%)
<3 times/week	15,379 (44.7%)	359 (42.7%)	53 (42.4%)	15,791 (44.7%)
3+times/week	17,388 (50.6%)	433 (51.5%)	60 (48.0%)	17,881 (50.6%)
BMI (by categories)				
<25kg/m²	13,786 (40.1%)	289 (34.4%)	41 (32.8%)	14,116 (39.9%)
25.0-29.9kg/m²	14,712 (42.8%)	380 (45.2%)	56 (44.8%)	15,148 (42.9%)
30.0+/kg/m²	5,885 (17.1%)	172 (20.5%)	28 (22.4%)	6,316 (17.2%)
Liver PDFF, %	4.89 (4.91)	5.15 (4.60)	5.67 (4.85)	4.90 (4.90)
VATi, L/m²	1.26 (0.713)	1.36 (0.709)	1.42 (0.819)	1.26 (0.714)
ASATi, L/m²	2.44 (1.20)	2.56 (1.23)	2.58 (1.35)	2.44 (1.20)
Muscle Fat Infiltration, %	7.30 (1.86)	7.43 (1.85)	7.70 (1.87)	7.31 (1.86)
Abdominal Fat ratio	0.494 (0.113)	0.509 (0.110)	0.513 (0.117)	0.495 (0.113)
TAATI, L/m²	3.67 (1.59)	3.90 (1.59)	3.97 (1.80)	3.68 (1.60)

*Categorical variables summarised with n (%). Continuous variables summarised with mean (SD). BMI: Body Mass Index. ASATi: abdominal subcutaneous adipose tissue index (ASAT normalised by height squared). TAATI: total abdominal adipose tissue index (ASAT+VAT divided by height squared). VATi: visceral adipose tissue index (VAT normalised by height squared).

CONCLUSIONS

- **PsA and PsO** are associated with **distinct abdominal body composition profiles** compared to controls.
- It suggests a p**otential impact** of the **inflammatory burden** of the psoriatic disease on the body composition.

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CONTACT INFORMATION

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