Obesity results in lower integrin expression in women with polycystic ovarian syndrome during the window of implantation

Frontiers in Endocrinology • Article • *Open Access* • 2025 •
DOI: 10.3389/fendo.2025.1590716

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Abstract

Objective: Polycystic ovary syndrome (PCOS) is a common endocrine disorder that is characterized by hormonal imbalances and ovarian dysfunction. Obesity is also a prevalent issue that has been linked to the development of PCOS. The present study aimed to investigate the gene expression of αvβ3 integrin, mucin-1, and E-cadherin in obese and non-obese women with and without PCOS. Methods: This prospective study was undertaken at the Advanced Reproductive Centre at Hospital Canselor Tuanku Muhriz (Universiti Kebangsaan Malaysia) from January 2019 to June 2021. A total of 40 women were recruited for the study and divided equally (n = 10) into four groups, namely, i) control with normal body weight, ii) control obese, iii) PCOS with normal body weight, and iv) PCOS obese. An endometrial tissue sample was collected after 10 days of daily oral micronized

progesterone (Utrogestan 200 mg) in the PCOS group. In the fertile or control group, midsecretory phase endometrial biopsy was performed following 7 days post-ovulation. Then, total RNA was isolated from the endometrial tissue. Gene expression was analyzed using RT-qPCR. Results: The results showed that the mRNA expression of αVβ3-integrin was significantly decreased in the PCOS obesity group compared to the PCOS normal body weight group and the control normal body weight group. No significant differences were observed in mucin-1 and E-cadherin expression between the groups. Conclusion: αvβ3 integrin plays an important role in the development of the window of implantation in obese PCOS individuals. Further research is needed to confirm these results and to identify the potential mechanisms underlying this association. Clinical trial registration: ClinicalTrial.gov, identifier NCT04175002.

Author keywords

gene expression; implantation window; integrin; obese; obesity; polycystic ovary syndrome

Indexed keywords

EMTREE drug terms

androgen; integrin; mucin 1; progesterone; uvomorulin

EMTREE medical terms

adult; Article; body mass; clinical article; clinical trial; controlled study; down regulation; female; gene expression; histology; human; human tissue; menstrual cycle; obesity; ovary polycystic disease; ovulation; real time polymerase chain reaction; RNA extraction; ultrasound

Device trade names

Commercial names given to devices, used for branding and differentiation in the market, commonly referenced in scientific and clinical research.

Tradename	Country	Manufacturer
iScript cDNA Synthesis Kit	United States	Biorad
iCycler iQ Real-Time PCR Detection System	United States	Biorad
RNeasy Plus Mini Kit	Germany	Qiagen

Chemicals and CAS Registry Numbers

Unique identifiers assigned by the Chemical Abstracts Service (CAS) to ensure accurate identification and tracking of chemicals across scientific literature.

mucin 1	212255-06-6
progesterone	57-83-0
uvomorulin	112956-45-3

Funding details

Details about financial support for research, including funding sources and grant numbers as provided in academic publications.

Funding sponsor	Funding number	Acronym
Ministry of Higher Education, Malaysia See opportunities by MOHE	FRGS/1/2018/SKK08/UKM/03/2	MOHE
Ministry of Higher Education, Malaysia See opportunities by MOHE		MOHE

Funding text

The author(s) declare financial support was received for the research and/or publication of this article. This study was funded by Malaysia Ministry of Higher Education via Fundamental Research Grant Scheme, grant number FRGS/1/2018/SKK08/UKM/03/2.

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