

How to estimate insulin resistance in PCOS patients - HOMA-IR or QUICKI?

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Insulin resistance affects 50-70% of women with polycystic ovary syndrome (PCOS).

The aim of our study was to estimate the prevalence of insulin resistance by different methods in a single cohort of 63 PCOS patients diagnosed by the Rotterdam criteria.

Methods: Anthropometric measurement, examination and fasting blood tests were made on the 3-5th days of their periods.

HOMA-IR (cut off >2.5) and QUICKI (cut off <0.357) was used to assess insulin resistance.

Results: Insulin resistant (IR) patients represented **48%** and **65%** of the cohort based on **HOMA-IR (HIR)** and **QUICKI (QIR)**, respectively.

Compared to insulin sensitive (IS) patients, **IR patients were older** (25.5 ± 5 vs. 30 ± 6 years).

The **body mass index (BMI)** was similar in the HIR (35.5 ± 7.33 kg/m²) and QIR (33.15 ± 7.81 kg/m²) and similar BMI was detected in IS patients according to HOMA (HIS, 25.7 ± 4.74 kg/m²) or QUICKI (QIS, 25.18 ± 4.53 kg/m²).

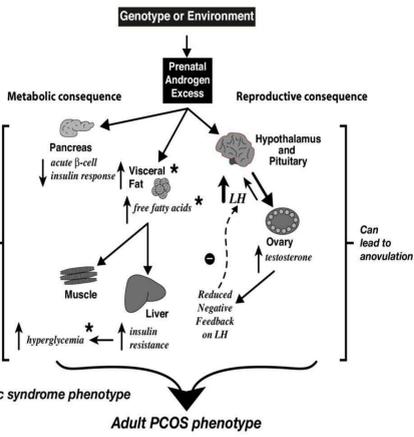
Fasting glucose levels did not differ in between IR groups (HIR: 4.88 ± 0.51; QIR: 4.88 ± 0.53 mmol/l), but **fasting insulin levels** were higher in HIR (18.09 ± 8.05 mIU/l) compared to QIR (15.64 ± 7.78 mIU/l) patients.

Lipid profiles and HbA1c did not differ significantly between IR groups.

The **LH:FSH ratio** was higher in IR (HIR:2.89 ± 1.44, QIR:2.73 ± 1.55) than in IS groups (HIS:2.11 ± 1.12, QIS:2.38 ± 1.21).

Patients in IR groups had higher **free androgen index (FAI)** than IS patients (HIR: 8.64 ± 6.4, QIR: 8.48 ± 6.21, HIS:6.34 ± 4.4, QIS: 5.47 ± 3.17). OGTT was performed in 37 patients indicating neither diabetes nor IFG.

Conclusion: By using QUICKI we found more IR patient than with HOMA. Fasting insulin levels and BMI were lower in the QIR than in the HIR group. The FAI was similarly elevated in the IR groups, and was lowest in the QIS group.



Our data

N= 77 single cohort form 1 center

PCOS was diagnosed based on the **Rotterdam criteria**

Insulinresistance was calculated in 63 patients

Based on **HOMA-IR** and **QUICKI** we divided the patients into **4 groups**:

HIR: insulinresistant based on HOMA-IR

HIS: insulinsensitive based on HOMA-IR

QIR: insulinresistant based on QUICKI

QIS: insulinsensitive based on QUICKI

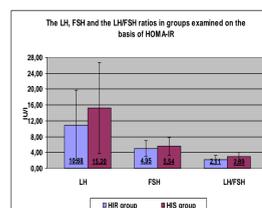
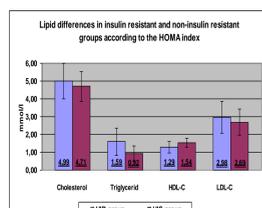
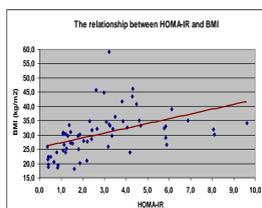
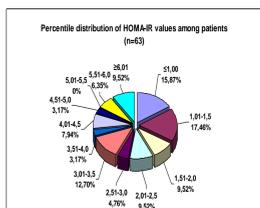
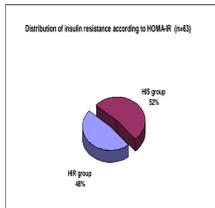
OGTT (oral glucose tolerance test,75g) was made in 37 patients

Conclusions

By using QUICKI we found more IR patient than with HOMA
Fasting insulin levels and BMI were lower in the QIR than in the HIR group
The FAI was similarly elevated in the IR groups, and was lowest in the QIS group

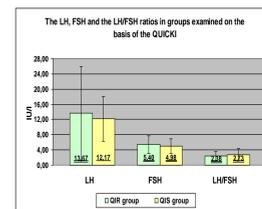
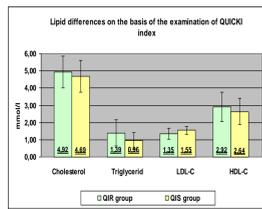
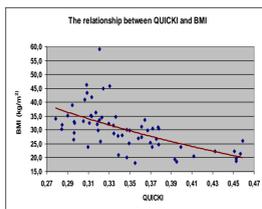
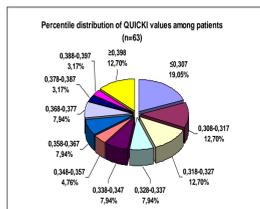
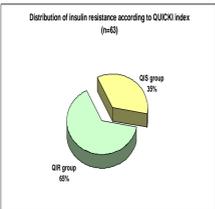
We suggest that QUICKI detects insulinresistance earlier than HOMA

HOMA IR results



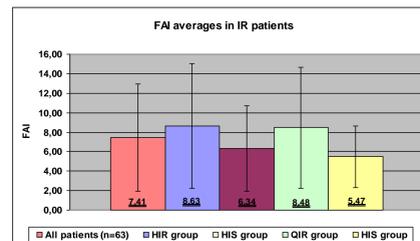
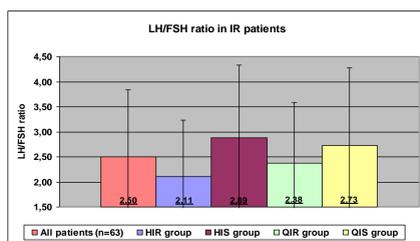
hormones	HIR group	HIS group	p value (HIRvs HIS)
Testosterone	1.87 ± 0.80	2.08 ± 1.07	P=NS
SHBG (nmol/l)	29.78 ± 23.48	43.17 ± 27.43	p<0.05
DHEA (nmol/l)	15.22 ± 13.68	20.28 ± 11.55	P=NS
DEAS (nmol/l)	8.3 ± 5.01	7.98 ± 2.86	P=NS
A-dion (nmol/l)	4.9 ± 2.41	4.68 ± 1.82	P=NS
17OH prog. (nmol/l)	1.36 ± 1.21	1.05 ± 0.76	P=NS
FAI	8.61 ± 6.4	6.34 ± 4.40	p<0.05

QUICKI results



hormones	QIR group	QIS group	p value (QIRvs QIS)
Testosterone	2.03 ± 1.00	1.90 ± 0.89	P=NS
SHBG (nmol/l)	33.03 ± 25.3	43.96 ± 27.12	p<0.05
DHEA (nmol/l)	18.15 ± 14.39	17.24 ± 9.34	P=NS
DEAS (nmol/l)	8.43 ± 4.44	7.708 ± 2.98	P=NS
A-dion (nmol/l)	5.04 ± 2.32	4.01 ± 1.58	P=NS
17OH prog. (nmol/l)	1.32 ± 1.11	0.96 ± 0.75	P=NS
FAI	8.46 ± 6.21	5.47 ± 3.17	p<0.05

LH/FSH ratio and FAI in insulinresistant patients



OGTT results

