Effects of pregnancy on obesity-induced inflammation in a mouse model of fetal programming

**Objective**
Maternal obesity is associated with increased risk of metabolic dysfunction in the offspring. It is not clear whether it is the metabolic changes or chronic low-grade inflammation in the obese state that causes this metabolic programming. We therefore investigated whether low-grade inflammation was present in obese dams compared to controls dams at gestation day 18.

**Methods**
Female mice were fed either a standard chow diet or a highly palatable obesogenic diet for 6 weeks prior to conception. Mice were either euthanized before mating (n=12 in each group), or euthanized on gestation day 18 (n=8 in each group). Blood and tissues were collected for analysis.

**Results**
The obesogenic diet increased body weight and decreased insulin sensitivity prior to conception, while there was no difference between the groups at gestation day 18. Local inflammation was assayed by macrophage count in adipose tissue and liver. Macrophage count in the adipose tissue was increased significantly by the obesogenic diet, and the hepatic count also showed a tendency to increased macrophage infiltration prior to gestation. This was further supported by a decreased population of monocytes in the blood of the obese animals, which suggested that monocytes are being recruited from the blood to the liver and adipose tissue in the obese animals. Gestation reversed macrophage infiltration, such that obese dams showed a lower adipose tissue macrophage count at the end of gestation compared to pre-pregnancy obese mice, and there were no longer a tendency towards increased hepatic macrophage count. Placental macrophage count was also similar in the two groups.

**Conclusion**
At gestation day 18, obese dams were found to have similar macrophage infiltration in placenta, adipose tissue and liver as lean dams, despite an incipient infiltration before gestation. Thus, the obesity-induced inflammation was reversed during gestation.
Web of Science (2013): Impact factor 5.386
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 4.71 SJR 2.355 SNIP 1.651
Web of Science (2012): Impact factor 5.221
ISI indexed (2012): ISI indexed yes
BFI (2011): BFI-level 1
Scopus rating (2011): CiteScore 4.9 SJR 2.671 SNIP 1.846
Web of Science (2011): Impact factor 4.691
ISI indexed (2011): ISI indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 2.538 SNIP 1.593
Web of Science (2010): Impact factor 5.125
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 2.017 SNIP 1.468
BFI (2008): BFI-level 1
Scopus rating (2008): SJR 2.226 SNIP 1.547
Scopus rating (2007): SJR 2.292 SNIP 1.678
Scopus rating (2006): SJR 2.354 SNIP 1.554
Scopus rating (2005): SJR 2.203 SNIP 1.602
Scopus rating (2004): SJR 1.621 SNIP 1.36
Scopus rating (2003): SJR 1.347 SNIP 1.215
Scopus rating (2002): SJR 1.456 SNIP 1.013
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.387 SNIP 1.251
Scopus rating (2000): SJR 1.17 SNIP 1.346
Scopus rating (1999): SJR 1.252 SNIP 1.267
Original language: English
DOIs:
10.1038/ijo.2014.69
Source: FindIt
Source-ID: 267118131
Research output: Research - peer-review ⋅ Journal article – Annual report year: 2014