Bupropion for Major Depressive Disorder and Smoking Cessation in Pregnancy: A Systematic Literature Review

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Introduction & Aims

Bupropion is an antidepressant repurposed to support nicotine cessation. Both nicotine use and depressive disorder are high prevalence disorders in pregnancy, with known adverse maternal and fetal outcomes (1). This review evaluates the effectiveness of bupropion for smoking cessation and depression in pregnancy and on birth outcomes following bupropion exposure during pregnancy.

Method

A systematic literature review was performed in February 2018 for published clinical studies investigating bupropion use in pregnancy following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines with Premedline, MEDLINE, EMBASE, PsychINFO, Cochrane Central, and PubMed search engines.

Results

Ten studies reported on adverse fetal outcomes: negative findings include a slightly elevated risk of ventricular septal defect and a slightly elevated risk of left outflow tract heart defects, however, most studies found no elevated risk of malformations (2-11). One study reported increased risk of attention deficit hyperactivity disorder with bupropion (11), another no adverse associations related to birthweight and prematurity, however did report an increased rate of spontaneous abortion (2). Four studies measured effectiveness for nicotine cessation in pregnant women, all found indicators that smoking was reduced, but none found an association with sustained tobacco abstinence (10, 12, 13, 14). While there were no studies primarily measuring the effectiveness of bupropion for depression for pregnant women, one small study (n=56), did show promising results (13).

Conclusion

Overall, the literature comprised of small sample size studies which utilised different methodologies and included multiple variables, making between group comparisons difficult. Only three studies were randomised controlled trials (n=156) (10, 13, 14). Future prospective controlled cohort studies may be able to determine the causality and temporality of observed fetal malformations, and larger randomised controlled trials may elucidate effectiveness of bupropion as an intervention for smoking cessation and depression in pregnant women.

Implications for Practice

While there are possible risks with its use in pregnancy, bupropion may be considered for smoking cessation during pregnancy where other approaches (e.g. nicotine replacement therapy) have failed or are not clinically appropriate and the benefits outweigh the risks. Disclosure of Interest Statement: No grants were received and there were no conflicts of interest in the development of this study.

References


Acknowledgements

Sally Lambert had a beautiful baby girl Edith on 3rd October 2017. Mother and baby are well.

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Table 1: Birth Anomalies & Developmental Sequelae

<table>
<thead>
<tr>
<th>Study</th>
<th>Sample</th>
<th>Case</th>
<th>Control</th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=114 bupropion exposed</td>
<td>N=158 no antidepressant exposure</td>
<td>No significant difference in birth anomalies or developmental sequelae compared to controls.</td>
<td>Bupropion is not associated with an increased risk of birth defects.</td>
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</table>

Table 2: Effectiveness of Cessation of Nicotine Use

<table>
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<th>Case</th>
<th>Control</th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=114 exposed</td>
<td>N=151 no antidepressant exposure</td>
<td>N=158 no antidepressant exposure</td>
<td>No significant difference in smoking cessation rates between bupropion and control groups.</td>
<td>Bupropion is not associated with improved smoking cessation rates compared to control.</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Effectiveness of Depression

<table>
<thead>
<tr>
<th>Study</th>
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<th>Case</th>
<th>Control</th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=114 exposed</td>
<td>N=151 no antidepressant exposure</td>
<td>N=158 no antidepressant exposure</td>
<td>No significant difference in depression scores between bupropion and control groups.</td>
<td>Bupropion is not associated with improved depression scores compared to control.</td>
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