Thromboprophylaxis with low dose unfractionated heparin plus compression stockings reduces thromboembolic complications of colorectal surgery


QUESTION: In patients having colorectal surgery, what is the effectiveness of prophylactic methods using heparin and mechanical methods on reducing postoperative thromboembolism (TE)?

Data sources
Studies were identified by searching Medline, EMBASE/Excerpta Medica, and the Cochrane Library (1970 to May 2000). Meeting abstracts and reference lists of reviews were handsearched.

Comparisons

<table>
<thead>
<tr>
<th>Comparisons</th>
<th>Weighted event rates</th>
<th>RRR (95% CI)</th>
<th>NNT (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any heparin v no treatment or placebo</td>
<td>5.5% v 16.7%</td>
<td>60% (38 to 74)</td>
<td>9 (7 to 16)</td>
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<tr>
<td>RRI (CI)</td>
<td>NNH (CI)</td>
<td></td>
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<tr>
<td>LDH alone v no treatment or placebo</td>
<td>21.1% v 5.1%</td>
<td>314% (22 to 1304)</td>
<td>7 (4 to 28)</td>
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</tbody>
</table>

*LDH = low dose unfractionated heparin. Other abbreviations defined in glossary; RRR, RRI, NNT, NNH, and CI calculated from data in article.

COMMENTARY

Colorectal surgery appears to be associated with a higher risk of thromboembolism than general surgery.1,2 This may be related to preoperative factors associated with a greater risk, such as cancer and inflammatory bowel disease; however, there are wide variations in thromboprophylactic regimens used.3

The findings of Wille-Jørgensen et al reinforce those of reviews in other fields; heparin reduces the odds of thromboembolism by at least half, and the addition of graduated compression hosiery is more effective than heparin alone. No difference exists between unfractionated and LMWH for thromboembolic events, but Wille-Jørgensen et al were unable to extract data on bleeding complications. Other reviews have found that LMWH results in greater reductions in the risk of minor bleeding complications than unfractionated heparin.4

2 major methodological weaknesses of this review deserve mention. Firstly, because few trials enrolled colorectal patients alone, Wille-Jørgensen et al extracted data on colorectal subgroups from studies of general surgical patients to increase statistical power, potentially introducing selection bias. Secondly, 66 colorectal and general surgery studies were identified for inclusion, but data could be obtained from fewer than a third of these (ie, authors of original studies failed to respond to the reviewers' requests for information). Despite these problems, the findings are consistent with those of other reviews and are biologically plausible; thus, current evidence justifies the use of both heparin and graduated compression hosiery for preventing thromboembolism in patients having colorectal surgery.

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4 studies (1183 patients) compared low dose unfractionated heparin (LDH) with low molecular weight heparin (LMWH); and 4 studies (130 patients) compared various combinations of mechanical methods. The screening methods used for DVT detection were the 125-I-fibrinogen uptake test (15 studies), mandatory venography (1 study), and Doppler ultrasound (3 studies). DVT and PE were analysed at postoperative times of about 7–14 days using a fixed effects model. 11 studies (641 patients) showed that any heparin was more effective than no treatment or placebo in preventing DVT, PE, or both (table). 4 studies (1183 patients) showed that LDH and LMWH did not differ for DVT and PE prevention (8.6% v 8.5%, respectively). 2 studies (111 patients) showed that LDH alone was associated with a higher risk for DVT or PE or both than LDH plus compression stockings (table).

Conclusions

In patients having colorectal surgery, low dose unfractionated heparin (LDH) plus compression stockings is a more effective thromboprophylactic than LDH alone. LDH and low molecular weight heparin do not differ for thromboprophylactic outcomes.

*LDH = low dose unfractionated heparin. Other abbreviations defined in glossary; RRR, RRI, NNT, NNH, and CI calculated from data in article.