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RELATIVE CHANGES IN INFLAMMATORY INFILTRATION AND FIBROTIC AREA DURING LOCAL GEL TREATMENT OF EXPERIMENTAL PERITONITIS

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Abstract. Inflammatory infiltration and fibrotic expansion describe different components of the peritoneal tissue response. This focused secondary analysis compared their relative changes using reported aggregate outcomes from a single experiment involving 72 rats with fibrinopurulent peritonitis. Conventional treatment was compared with local application of a composite gel after abdominal sanitation. Reported infiltration density was 20 ± 2 versus 52 ± 4 cells per field of view, while fibrotic area was 1.5 ± 0.1 versus 2.8 ± 0.2 mm² in the gel and control groups, respectively. The corresponding relative reductions were 61.5% and 46.4%. Both endpoints therefore changed in the same direction, although their normalized magnitudes differed. This comparison characterizes the reported group response without establishing an individual association between inflammation and fibrosis or a mechanism linking the two outcomes.

Keywords: experimental peritonitis; composite gel; cellular infiltration; fibrotic area; morphometry; relative reduction

Relevance. Experimental studies show that peritoneal cellular responses can influence whether injured surfaces remain separated or develop adhesions [1]. Infiltration density and fibrotic area nevertheless measure different tissue components. Comparing changes relative to each endpoint's own control value can describe the response to local treatment without combining measurements expressed in different units.

Objective. To compare the relative changes in cellular infiltration density and fibrotic area associated with local composite gel treatment of experimental fibrinopurulent peritonitis.

Materials and methods. A focused secondary analysis used aggregate outcomes from one experimental study of 72 outbred white rats weighing 180-220 g. The control group received conventional treatment. In the intervention group, abdominal sanitation was followed by local application of a gel containing levofloxacin, kukumazin, and sodium carboxymethylcellulose. The parent protocol included assessments on days 3, 7, 14, and 21 and followed laboratory animal welfare guidance [2,3].

Relative reduction was calculated as the control-minus-treatment difference divided by the control value and multiplied by 100. The primary study's reported between-group p values were retained; no new significance test was performed. The aggregate endpoint values were not linked to a specific assessment day, so no numerical time trajectory was reconstructed.

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Results. Cellular infiltration density was 20 ± 2 cells per field of view in the gel group compared with 52 ± 4 in controls ($p < 0.001$). The absolute difference was 32 cells per field, corresponding to a relative reduction of 61.5%. Fibrotic area was 1.5 ± 0.1 versus 2.8 ± 0.2 mm² ($p < 0.01$), an absolute difference of 1.3 mm² and a relative reduction of 46.4% (Table 1).

Table 1. Relative changes in the reported group endpoints

Endpoint	Control	Gel group	Relative reduction
Infiltration density, cells per field	52 ± 4	20 ± 2	61.5%
Fibrotic area, mm²	2.8 ± 0.2	1.5 ± 0.1	46.4%

After normalization to the respective control values, residual infiltration density and fibrotic area represented 38.5% and 53.6% of control, respectively. The 15.1 percentage-point difference between their relative reductions is descriptive and is not a statistical comparison of endpoint-specific treatment effects.

The paired direction of these group changes supports assessing inflammatory and fibrotic components separately. Lower infiltration density cannot identify which cell populations changed, while a smaller fibrotic area does not imply complete resolution of fibrosis. Aggregate group summaries also cannot establish a correlation between the two outcomes in individual animals.

Conclusions. Within the same experimental dataset, local composite gel treatment was associated with lower reported cellular infiltration density and fibrotic area. Their relative reductions were 61.5% and 46.4%, respectively. Control normalization provides a concise description of these distinct endpoints, but does not demonstrate a causal relationship between them.

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