Biotherapy Journal Forum Review
Dr. Sherman, May 2015

This month's Journal Forum reviews a cost analysis of maggot therapy conducted in Thailand.

JOURNAL CITATION:
Eamkong S, Pongpanich S, Rojanaworarit C. Comparison of curing costs between maggot and conventional therapies for chronic wound care. J Health Res 2010, 24(suppl 2): 21-25

OBJECTIVE:
The aims of this study were: a) to evaluate the effectiveness of maggot therapy for treating wounds; b) to analyze the cost of therapy in a Thai district hospital setting; and c) to compare the cost of maggot therapy to that of conventional wound treatments.

METHODS:
Study Design - Retrospective descriptive study.

Study Population – Outpatients and Inpatients at Bangyai Hospital, Nonthaburi Province, Thailand, treated for chronic wounds between January and October, 2009.

Interventions compared - Maggot therapy vs "conventional therapies" (not clearly defined).

RESULTS:
Analysis of Patient Demographics - A total of 150 cases were analyzed: 80 had received maggot therapy, 70 had received only conventional therapy. Maggot therapy was performed on a greater percentage of outpatients than inpatients. Ages ranged from 3 years old to 86 years old. The majority of wounds were diabetic foot ulcers (75%), pressure ulcers (13%) and "infected ulcer wounds" (11%). The 3 year old suffered a burn injury and was treated with maggot therapy; the other wound types were divided more or less equally between maggot therapy and conventional therapy (no more than 10% difference).

Endpoint Assessments - Wound healing time was shorter in the maggot-treated group (6.5 days vs 14 days). The amputation rate was lower in the maggot treated group (1.25% vs 7.14%). The material costs for maggot therapy were greater than the material costs of conventional therapy (3,000 Baht vs 300 Baht), and the related costs (nursing care and hospitalization) were similar between the two treatment groups (daily inpatient costs about 740 Baht per day during maggot therapy, 600 Baht/day during conventional therapy; daily outpatient costs reported as essentially nothing in both groups). However, given that most maggot-treated patients required only one treatment

with maggots, and given that their wounds healed much more quickly, the total treatment costs (materials costs and related costs) in the maggot-treated group were much lower than the total treatment costs in the conventionally treated group, on a per-patient or per-wound basis (6,700 Bhat vs 16,800 Baht).

AUTHORS' CONCLUSION:

"It is well illustrated that maggot therapy could potentially reduce wound curing cost in a district hospital setting and effectively resulted in shorter curing period and less likely to have limb amputated. Ultimately, maggot therapy should be considered as a rational alternative for chronic wound curing in terms of the economical cost and wound curing effectiveness."

REVIEWER'S COMMENTS:

This is an important study because its findings suggest that maggot therapy is not only more effective and efficient in treating serious wounds, but that it is also less costly. This is even more impressive when considering that the cost of conventional therapy in Nonthaburi Province, Thailand, is much lower than the cost of conventional therapy in North America or Europe. In North American or Europe, the cost savings could be expected to be even greater.

So why does the largest prospective cost analysis of maggot therapy (Soares et al, BMJ 2009;338;b825) report that there is no significant cost savings with maggot therapy? Hopefully someone will review that study in detail, for this Journal Forum. One reason could be that in that particular study there was no significant difference in the total healing time for patients treated with or without maggot therapy. In fact, maggot therapy accounted for less than 10% of the total treatment time of those patients who received it, so 90% of their treatment coarse would have cost the same as the control or conventional treatment patients. Again, hopefully that article will be analyzed in detail in this forum, so that we can better appreciate, if not also understand, the differences.

Limitations to this study begin with the fact that it is a retrospective analysis, and as such it is not subject to the rigors of randomization. Additionally, the same data was not collected on all patients. For example, many conventionally treated patients did not have the surface area of their necrotic tissue measured, so the analysis of changes in necrotic tissue over time is not reliable. Additionally, the statistical analysis does not include a calculation of the probability that the conclusions are wrong (in other words, the probability that there are not really two different means between the maggot-treated patients and the conventionally-treated patients, commonly reported as "the *p*-value").

Still, this study supports the need for further studies addressing the cost benefits of maggot therapy. Such analyses could and should be a part of future prospective trials of maggot therapy.