Article DIGEST

Our pick of recently published papers with relevance to the care of the diabetic foot

'The authors could not reliably conclude whether systemic or local antibiotics were better, or whether any agent was better than another.'

THE JOURNAL OF FOOT & ANKLE SURGERY

Transmetatarsal amputation may be linked to high complications rate

1 This review of 90 people (101 amputations) who had transmetatarsal amputation (TMA) assessed postoperative complications for a mean follow-up of 2.1 years.

2 The complications included in the analysis were: chronic stump ulceration; equinus and calcaneus gait; hospital mortality less than 30 days after the operation; postoperative infection; stump deformity; stump infarction; and wound dehiscence.

3 Uncomplicated outcomes were defined as the absence of the stated complications in combination with the ability to walk on the residuum, using a diabetic shoe and filler, after at least 6 months' follow-up.

4 Postsurgical complications were noted in 88 cases (87.1 %); two people died within 30 days of their operation.

5 In addition, χ^2 tests were performed to see if healing was linked to cerebral vascular accident, coronary artery disease, diabetes, end-stage renal disease, hypertension or a palpable pedal pulse.

6 A palpable pedal pulse was predictive of not requiring more proximal amputation (P=0.03), but end-stage renal disease was predictive of non-healing (P=0.04).

Pollard J, Hamilton GA, Rush SM, Ford LA (2006) Mortality and morbidity after transmetatarsal amputation: retrospective review of 101 cases. *The Journal of Foot & Ankle Surgery* **45**(2): 91–7

'Large well-controlled studies are needed in order to make informed judgements, with regard to effectiveness of treatment and cost-effectiveness, when prescribing antimicrobial agents for the treatment of the infected diabetic foot ulcer.'

DIABETIC MEDICINE

More robust research needed for antimicrobial agents

1 In parallel with the Health Technology Assessment document (summarised on right) this paper was also published. It outlines the systematic review and its aim of reviewing the evidence for antimicrobial intervention for diabetic foot ulcers.

2 From a variety of sources searched, 23 studies that investigated the effectiveness or cost-effectiveness of antimicrobial agents were found. The trials were not standardised enough or were too weak to be pooled.

3 The authors stated that there is no strong evidence for any particular antimicrobial agent for the prevention of amputation, the resolution of infection or ulcer healing.

4 Therefore, the authors concluded, large well-controlled studies are needed in order to make informed judgements, with regard to effectiveness of treatment and cost-effectiveness, when prescribing antimicrobial agents for the treatment of the infected diabetic foot ulcer.

Nelson EA, O'Meara S, Golder S et al on behalf of the DASIDU Steering Group (2006) Systematic review of antimicrobial treatments for diabetic foot ulcers. *Diabetic Medicine* **23**(4): 348–59

HEALTH TECHNOLOGY ASSESSMENT

Lack of evidence for or against any antibiotic for DFUs

1 The authors conducted a systematic review to ascertain the effectiveness of diagnostic tests used to identify infection in diabetic foot ulcers (DFUs) and of methods to treat infected ulcers.

2 Another objective of the paper was to construct a decision-analysis model in order to identify the most efficient method of diagnosing and treating infection in the DFU, and to describe any areas of research that would lead to more certainty when diagnosing and treating the infected DFU.

3 A variety of sources were searched from their date of creation to November 2002. Studies concerned with diagnosis, effectiveness of treatment and the cost-effectiveness of treatment were selected for this study.

4 Three studies dealing with diagnosis and 23 studies dealing with effectiveness, of which two also dealt with cost-effectiveness, were found.

5 Due to a lack of data to populate the decision-analysis model with the specificities and sensitivities of diagnosis of infection in DFUs and a lack of strong data on the probabilities of healing, amputation or death in any of the intervention studies analysed, the most effective diagnostic and treatment strategy could not be described.

6 The authors conclude that the evidence is too weak to draw any reliable implications for practice. With respect to treatment they could not reliably conclude whether systemic or local antibiotics were better, or whether any agent was better than another.

Nelson EA, O'Meara S, Craig D et al (2006) A series of systematic reviews to inform a decision analysis for sampling and treating infected diabetic foot ulcers. *Health Technology Assessment* **10**(12): 1–221

'The chances of healing and amputation are predicted with high accuracy using this wound-based clinical scoring system.'

'The pole test could play an important, non-invasive role in detecting critical limb ischaemia, especially in people presenting with calcified incompressible leg arteries.'

DIABETIC MEDICINE

Available evidence for infection diagnosis methods is weak

1 The diagnosis of infection in diabetic foot ulcers involves its identification by laboratory analysis or clinical judgement.

2 This systematic review aimed to summarise and assess the evidence on the diagnostic ability of clinical examinations, microbiological sampling techniques and microbiological analysis techniques.

3 A variety of electronic and other sources were searched. Three criteria had to be met by all studies included in the analysis. Each study had to: compare the results of an independent reference standard with an alternative diagnostic method; have, as its target population, people older than 18 years with a diabetic foot ulcer; have enough data to compile a 2x2 diagnostic table (with true and false positives and negatives).

4 Three studies were identified that met all of the inclusion criteria. One on clinical examination, another on sample collection and a final on sample analysis. None of the studies had the best possible reference standard.

5 Other problems were also identified with the studies' methodologies, for example results were not interpreted blind, or the index and reference samples were not always taken at the same time.

6 The authors concluded that the available evidence is insufficient and too weak to allow any implications for practice to be elucidated.

O'Meara S, Nelson EA, Golder S et al on behalf of the DASIDU Steering Group (2006) Systematic review of methods to diagnose infection in foot ulcers in diabetes. *Diabetic Medicine* **23**(4): 341–7

DIABETES CARE

New scoring system to predict diabetic foot ulcer healing

1 The aim of this study was the formulation of a wound-based clinical scoring system that can predict the chances of diabetic foot ulcers healing and also the risk of amputation.

2 The four defined parameters assessed were: palpable pedal pulses; probing to bone; ulcer location; and the presence of multiple ulcers. A score of '1' was assigned if: pedal pulses were absent; probing to bone was a 'yes'; the site of ulceration was foot (as opposed to toe); or the individual had multiple ulceration. Otherwise a score of '0' was assigned. The total diabetic ulcer severity score (DUSS) was calculated by adding the scores to a theoretical maximum of four.

3 The four parameters were prospectively assessed in 1000 consecutive patients at the authors' hospital. Kaplan-Meier analysis was used to calculate the probability of the ulcer healing and the risk of amputation.

4 Individuals who would score a '0' on any of the parameters had a significantly higher probability of their ulcers healing. An increase in the DUSS score reduced the chance of healing by 35%.

5 The chances of healing and amputation are predicted with high accuracy, conclude the authors. They say that this could be useful in anticipating healthcare costs.

Beckert S, Witte M, Wicke C et al (2006) A new wound-based severity score for diabetic foot ulcers: A prospective analysis of 1,000 patients. *Diabetes Care* **29**(5): 988–92

EUROPEAN JOURNAL OF VASCULAR AND ENDOVASCULAR SURGERY

Pole test offers hope for calcified and incompressible leg arteries

1 Sphygmomanometric measurement for the quantification of critical limb ischaemia (CLI) in people with diabetes can be flawed due to, for example, calcification of the blood vessels. The reproducibility of transcutaneous oxygen pressure ($TcPO_2$) measurements is questionable because of the different degrees of ischaemia people have.

2 The objective of this study was to assess the effectiveness of the 'pole test' (based on hydrostatic pressure derived from leg elevation) to detect CLI.

3 Seventy-four individuals (83 legs) with rest pain or gangrene were evaluated by the pole test, cuff-manometry, $TcPO_2$ and arteriography.

4 Cuff-manometry results were significantly higher than those obtained using the pole test; the difference remained significant for people with and without diabetes.

5 Correlation between $TcPO_2$ and the pole test was only observed in people with diabetes. No correlation between cuff-manometry and $TcPO_2$ was observed.

6 An accuracy of 88%, a sensitivity of 95% and a specificity of 73% was observed for the detection of CLI.

7 The pole test could play an important, non-invasive role in detecting CLI, especially in people presenting with calcified incompressible leg arteries.

Paraskevas N, Ayari R, Malikov S et al (2006) 'Pole test' measurements in critical leg ischaemia. *European Journal of Vascular and Endovascular Surgery* **31**(3): 253–7