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Treatment of Infected Diabetic Foot Ulcers



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Modern wound therapy has some solutions ready.

Wound Treatment Amputations are certainly the worst consequence if the diabetic foot syndrome is badly treated. However, modern wound treatment has some tricks up its sleeve to avoid this. Dr. Dirk Lammers from Münster reports.

Text:
Dr. Dirk Lammers.

In spite of the technical and medical progress in the treatment of diabetic foot syndrome, amputation is still the ultimate treatment option for some patients with diabetic foot syndrome. In western industrial nations, diabetic foot lesions are the most

frequent reason for non-traumatic amputations.

In comparison with non-diabetics, diabetic patients have a 15–10% increased risk of suffering an amputation of the lower extremities.

Treating the diabetic foot syndrome requires consistent relief

of pressure. It is also important to ensure that peripheral perfusion is adequate for healing. Combating infections is also essential. More and more specialists have been worrying about the critical colonization of wounds with multire-

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sistant pathogens. There is therefore an increasing demand in modern wound therapy for wound dressings with potent antibacterial activity. Evidence has accumulated in recent years that ionic silver is effective in the treatment of the inflammatory phase of wound healing.

Combating bacteria

Silver ions or radicals unselectively inhibit the bacterial respiratory chain and are therefore bactericidal. They do not harm human cells. In vitro, silver ions also regulate matrix metalloproteinases (MMP), which are important for the proper course of wound healing, and support re-epithelialization. On the other hand, silver should only be used during the initial inflammatory phase of wound healing and should not be used for more than 4 weeks. A small quantity of silver is enough to attain the desired effect, but there must be direct contact with the bacteria. Therefore many silver-containing wound dressings are only suitable for very superficial wounds. Deeper defects or wound cavities can only be effectively treated with silver alginates or silver-containing hydrofibres.

It is often difficult to remove the material totally when the dressing is being changed. Askina® Calgitrol® Paste has now been introduced, which is the first silver alginate dressing in the form of a paste. This is available as a 15 g tube in sterile packaging. The advantages of this formulation can best be described on the basis of some examples from our daily work in the foot outpatient clinic.

Conservative treatment

A 79-year old type 2 diabetic, with diabetic polyneuropathy, retinopathy, nephropathy and chronic osteoarthropathy with Charcot's foot right, presented with an acute lesion on the lateral border of the right foot, above the condyle of the fifth metatarsal bone, which was

„Silver ions or radicals unselectively inhibit the bacterial respiratory chain.“

heavily infected, with the initial phases of a forefoot phlegmon. Duplex sonography showed that there was no haemodynamically relevant peripheral arteriovenous occlusive disease. Aside from the known destruction due to the Charcot's foot, there was no clinical or native radiological evidence for pathological changes related to osteomyelitis in the anterior medial femur condyle. We therefore decided to attempt conservative treatment by relieving pressure with a fabricated orthosis, immobilization in a wheelchair, wound

had not previously been available. After debridement, the paste was applied directly to the wound. Using the tip of the tube, the paste could be applied precisely to the wound, without any additional instruments. Polyurethane foam was used as secondary dressing. After 2 days, Askina® Calgitrol® Paste was rinsed out of the wound with physiological saline and was fully removed in this way. There was no discolouration from the silver ions. As the dressing change was extremely simple, this was eventually performed independently by the patient's wife. After the infection had regressed, we switched to a hydrogel. Figures 2 and 3 show the subsequent clinical course.

A 75-year old female patient presented with a severe infection of the nail of the right big toe. The underlying diseases were polyneuropathy and chronic venous deficiency. Here too there was no relevant peripheral arteriovenous occlusive disease. Figure 4 shows the initial finding after debridement. The wound swab showed massive colonization with *Pseudomonas aeruginosa*. It is interesting in this case that the patient had previously reacted allergically to treatment with a silver-containing hydrofibre dressing. The wound had existed for 4 months and several therapy cycles with systemic antibiotics had ultimately been unsuccessful. Nevertheless, we decided to attempt treatment with Askina® Calgitrol® Paste. The clinical course was surprisingly favourable: The infection had fully regressed within 2 weeks. A large proportion of the wound was then undergoing re-epithelialization (see Figures 5 and 6). It is possible that the large area of contact between the silver alginate matrix and the wound surface – without cavities – allowed adequate reduction of the critical bacterial colonization.



Abb. 1.



Abb. 2.



Abb. 3.



Abb. 4.



Abb. 5.

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debridement and antibiotic therapy in accordance with the resistogram. As was appropriate to the stage, we started local treatment of the initial phase with a silver alginate. As can be seen in Figure 1, the plantar wound edges are rather dry. Alginate residues remained in the wound. During subsequent treatment, we switched to Askina® Calgitrol® Paste, which

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It must be emphasized that the selection of the correct wound dressing during wound treatment for a specific stage is on-

ly one component of the overall treatment of the diabetic foot syndrome. Ulcer healing cannot be initiated without adequate pressure relief, guaranteeing adequate perfusion and regular debridement. Thus, to ensure adequate quality, the treatment should be performed in properly qualified foot treatment facilities.

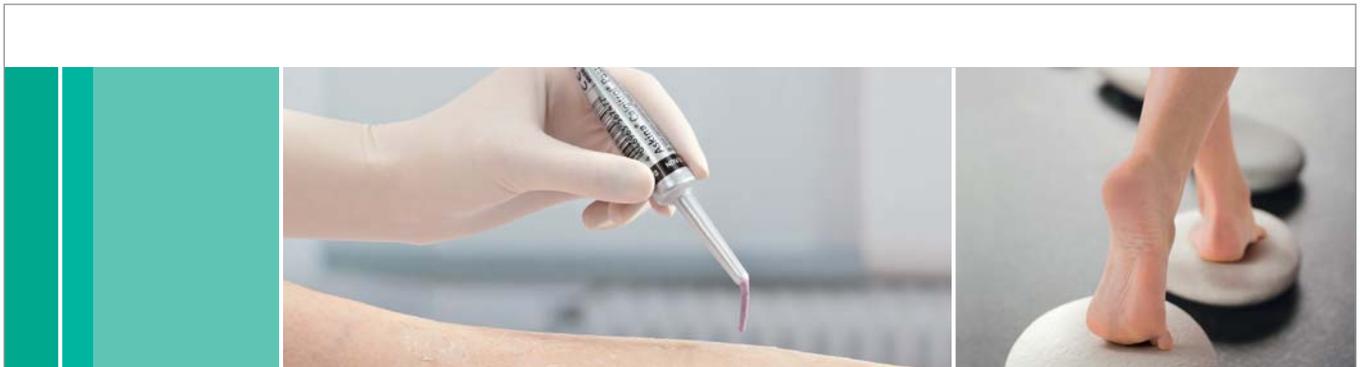
Facilitate treatment

Nonetheless, Askina® Calgitrol® Paste is a new product that facilitates treatment and can improve the control of infections in the inflammatory phase of wound treatment. Handling is simple. No additional instruments are necessary, so that additional treatment costs can be spared. This is a success-



Abb. 6.

ful addition to the overall range of products used for the modern wound treatment of the diabetic foot.



Askina® Calgitrol® Paste – The Silver Alginate dressing in a tube

Askina® Calgitrol® Paste simplifies wound care and your working day:



- **Saves time:** Simple handling - Hold the tip of the tube in the wound and apply the silver alginate mixture by pressing.
- **Saves money:** No sterile instruments needed for application - individual tubes are in sterile packaging.
- **Antimicrobial efficacy:** Silver ions are released continuously. These are active against all wound microbes, including multiresistant pathogens such as MRSA.
- **Safety:** The soft silver alginate matrix optimally fits the wound bed; there are no dead spaces in which bacteria can breed.



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