Basic Principles of Wound-Care & Off-Loading

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Ideal world.... But....
...looks quite innocent ...but....
Etiology definition/treatment is essential

- Venous insufficiency
- Arterial insufficiency
- Pressure
- Trauma
- Infections
- Dermatological diseases
- Neuropathic diseases
- Complex combinations: ex. diabetic foot
Wound-care.... The problem

Complexity of pathology

Booming Wound-Care Products/Dressings/Devices/Techniques

Confusions/Mistakes
The Solution?

Intuitive classification/treatment algorithm based on 4 important parameters

- **T**issue
- **I**nfection
- **M**oisture
- **E**dge

**LOCAL WOUND-BED PREPARATION**
TISSUE

GRANULATION

NECROSIS
Fibrin
Black necrosis

HYPERKERATOSIS
TIME: Tissue – status

- Granulation tissue formation
TIME: Tissue – status

- Black necrosis
TIME: Tissue – status

- Yellow fibrin deposits
TIME: Tissue – status

- Hyperkeratosis
TIME Tissue : TREATMENT

-> a lot of (black) necrosis, (tight) fibrin, hyperkeratosis

SURGERY

- Bistouri
- Hydrosurgical systems (ex Versajet°)
TIME Tissue : TREATMENT

-> intermediate necrosis & fibrin

(BIO) MECHANICAL, NON-SURGICAL SOLUTIONS

– NWPT systems
– MAGGOT THERAPY
– WET TO DRY DRESSINGS
TIME Tissue: TREATMENT

-> small amounts necrosis & fibrin, some granulation

AUTOLYTIC – OSMOTIC – ENZYMATIC DEBRIDEMENTS

– Hydrogels
– Alginate
– Honey dressings
– Proteolytic enzymes

- Chlostridiopeptidase A + proteases
- Selective collagenous destruction
INFECTION

CONTAMINATION

COLONIZATION

CRITICAL COLONIZATION

INFECTION
TIME: Infection – status

- Calor, Rubor, (Dolor), Tumor
- Purulent aspect
- Odor
- Swap cultures vs Deep tissue culture sampling!!!
TIME: Infection: TREATMENT

**LOCAL TREATMENT**
- Surgical drainage
- Antiseptics (Iodium, Chlorohexidine, acetic acid...)
- NO ANTIBIOTICS
- Dressings with Ag

**SYSTEMIC TREATMENT**
- ANTIBIOTICS
- CAVE OSTEOMYELITIS
MOISTURE

Too humid

Maceration

Epithelialisation

Too dry

granulation tissue

NO HEALING
TIME : Moisture : TREATMENT

• TOO WET

->Absorbing dressings

Alginates, hydrocellular poly-urethaaan dressings, hydrofiber dressings, ...
TIME: Moisture: TREATMENT

- TOO DRY

-> Hydrating dressings

Hydrogels, hydrocolloid dressings, silicone dressings...
nevertheless... no healing
TIME: *Edges*: TREATMENT

- **ACTIVE RE-EPITHELIALIZATION**

-> BIOLOGICAL MEDIATED DRESSINGS

- Extra cellular matrix (ECM) containing dressings
  - Collagenous dressings (Catrix°, DropCollagen°,...)
  - Hyaluronic acid dressings (Hyalofill°, Hyalogran°, Jaloplast°,...)

- MMP modulators: Promogran°, Dermax°, Prisma°(+Ag)
TIME: *Edges* : TREATMENT

- **ACTIVE RE-EPITHELIALIZATION**

-> **BIOLOGICAL DRESSINGS**

- **Growth factors**: PDGF Becaplermin (Regranex°), KGF, EGF,...
- **Cell Cultures** (cultivated keratinocytes)
- **Tissue engineered skin**

Dermagraft°, Silicone + Dermale kweek (Integra°), 2 layer reconstructed skin (Apligraf°, Orcel°, Hyalograft 3D°)
DIABETIC FOOT: principles of OFF LOADING
DIABETIC FOOT : principles of OFF LOADING
CONCLUSION

• Multidisciplinary WOUND CARE according to the pragmatic rules of TIME strategy makes it safe and efficient;

• Fluent dynamical switches between the different phases are obligatory

• Off loading is one of the most essential parts of CLI treatment.
Nice, June 2016: i-MEET

Woud/off-loading cases
CASE 1

- Recanalization successful: single outflow ATA up to ADP and foot arch

  - TIME?
  - OFF LOADING?
  - ORIGIN?
  - PREVENTION?
  - MULTIDISCIPLINARITY?
CASE 1

- 2 Weeks later....
- Continue our treatment?
- Changing strategy?
CASE 2

- Diabetic patient, lateral ankle ulceration: QUID?
- RECANALIZATION NEED?
- OTHER TREATMENTS?
- TIME?
- OFF LOADING?
- MULTIDISCIPLINARITY?
CASE 3

- IDDM patient, fever, no pain

- **RECANALIZATION NEED?**
- **OTHER TREATMENTS?**
- **TIME?**
- **OFF LOADING?**
- **MULTIDISCIPLINARITY?**
CASE 4

- Lateral ankle ulceration, spontaneous, non diabetic

- RECANALIZATION NEED?
- OTHER TREATMENTS?
- TIME?
- OFF LOADING?
- MULTIDISCIPLINARITY?
CASE 5

- IDDM patient, new shoes, “all at once”.....

- RECANALIZATION NEED?
- OTHER TREATMENTS?
- TIME?
- OFF LOADING?
- MULTIDISCIPLINARITY?