Case Study

OSTEOMYELITIS & ABSCESS OF FOOT

Patient Age / Gender: 45 y/o Hispanic male
Ulcer / Wound Type: Grade 2 Diabetic Foot Ulcer
Location: Lateral Plantar Left foot
History: Patient has a history of a non-healing diabetic foot ulcer of the left foot. The patient, who is neuropathic and has no sensation in the foot, had been treated for 2 months using multiple off loading devices, debridement, and local care. Patient was subsequently referred for evaluation and treatment of his foot ulcer.

DIAGNOSIS

Wound-Mapping® Ultrasonic Scan of the diabetic ulcer revealed superficial undermining in and around the wound surface. Disruptions of the cortical surface with some small bone fragments were noted. These findings are commonly found in areas of osteomyelitis. A tract leading to a large abscess was identified and the abscess was measured (2.13 cm x 0.90 cm) using ultrasound. This abscess was not diagnosed until viewed using the Wound-Mapping® scanning method. It is also of note that the probing of the wound using standard technique (sterile Q-Tip) did not reveal the sinus tract or the presence of the subcutaneous abscess.

TREATMENT

Once the abscess and osteomyelitis were discovered using the Wound-Mapping® technique, an ultrasound guided aspiration in the region of interest was performed. The sampled aspirate was sent to the lab to be cultured so that the bacteria causing the infection could be identified. Ultrasound guidance enabled a route of needle entry through healthy tissue rather than the wound bed, preventing the sampling of bacteria that were present at the wound’s surface but not present at the site of the osteomyelitis. The non-invasive scanning technique of ultrasound provided early discovery of the infection and subsequent treatment was instituted before the patient exhibited cellulitis or systemic symptoms. Patient went on to have intravenous antibiotic therapy via a PICC line to treat the osteomyelitis.
The Hitachi Aloka Noblus is a premium portable ultrasound system that supports multiple applications over a wide range of clinical environments. All circuits related to image quality are fully digital which allows for high spatial resolution, high contrast resolution and a wide dynamic range. The removable console contains an internal battery allowing examinations to be performed even when an external power source is not available. Noblus also supports wireless LAN for DICOM communication. A full complement of linear, convex and phased array transducers are available for Noblus allowing the ultimate in clinical flexibility.

**CLINICAL USES**
Shared Services, Emergency Medicine, Pain Management, Wound Care

**APPLICATIONS**
Radiology, Interventional Radiology, Obstetrics, Gynecology, Abdominal, Peripheral Vascular, Urology, Musculoskeletal, Pediatrics, Cardiology, Small Parts

**POWER REQUIREMENTS**
Input: 240/120 V @ 60 Hz
Power Consumption:
(Standard Components): 250W
(Using Cart): 550W

**ENVIRONMENT**
Temperature: 10 ~ 35°C
Relative Humidity: 30 ~ 85%
(No Condensation)
Atmospheric Pressure: 700 ~ 1060hP

**PHYSICAL DIMENSIONS**

**CONSOLE**
Weight: 19.9lbs (9kg)
Dimensions: 13.8” x 20.2” x 15.0”
Display: 15” Non-interlaced HD LCD
Pixels: 1,024 x 768
Display Range of Motion:
Swivel Angle: +/-90 deg.
(Tilt Angle: -90 ~ +30 deg.

**CONSOLE WITH CART, PROBE EXTENSION UNIT AND B&W PRINTER**
Weight: 88.2lbs (40kg)
Dimensions:
20.5” x 20.4” x 44.3” (Height is 52.2” in fully raised position)

**STANDARD IMAGE QUALITY FEATURES**
HI Definition Tissue
Harmonic Imaging (HdTHI)
Extends penetration and increases resolution by transmitting a wide band pulse and receiving the second harmonic and sub-harmonic signals across the entire spectrum of the probe bandwidth.

HI Compound Imaging (HI Com)
Is especially beneficial for improving the visibility of luminal structures. HI Com transmits and receives ultrasound beams in various directions and superimposes the resultant images in real time.

Adaptive Imaging (HI REZ+)
Utilizes Hitachi Aloka’s high speed digital processing engine to extract structures and emphasize tissues without reducing frame rate.

**Fine Flow**
Displays high-definition, high frame rate color doppler images down to fine vessels with minimal blooming.

**STANDARD WORKFLOW EFFICIENCY**
HI Support
Reduces examination time by allowing time gain compensation, B mode gain, base line, pulse repetition frequency and doppler gain, etc. to be adjusted with a single touch.

On-Board User Manual
User Manual Is integrated with the application allowing for convenient user guidance.

Examination Data Management and Storage
Noblus stores full-fidelity images, measurements, and other data internally and can also copy information to USB and USB HDD.

Auxiliary Monitor Support
Noblus includes a DVI-D connector for auxiliary monitor attachment.