CHAPTER 8 WARM WATER IMMERSION SKIN DISEASES

(NATO STANAG 2122, CENTO STANAG 2122, SEATO STANAG 2122)

The swelling, wrinkling, and whiteness of the skin of the hands when they have been immersed in water for a half-hour or so is familiar to everyone. These effects are similar to the visible damage that most people will incur if the stratum corneum stays wet for 48 to 72 hours.

Types of Warm Water Immersion Skin Diseases

This prolonged wetness of the skin causes three types of disabling skin conditions.

TYPE 1 - "WARM WATER IMMERSION FOOT"

Warm water immersion foot usually occurs when the exposure to water is intermittent as happens when soldiers have to cross numerous creeks, streams, and canals with dry ground between. It is a type of dermatitis that is confined to the soles of the feet.

Type 1 immersion foot

Symptoms

After about three days of intermittent exposure, the thick stratum corneum of the soles of the feet becomes white and wrinkled and some of the creases in the soles grow quite tender on walking. In the following 24 to 48 hours, severe pain develops with walking and the feet swell slightly. The soldier may describe a sensation of walking on pieces of rope in the boot. When the boot is removed, it may be impossible to put it back on because of the pain and swelling.

Treatment

Drying the skin and keeping it dry is the only treatment for Type 1 warm water immersion foot. This is best accomplished by bedrest, without boots or socks. Within 24 hours, after treatment is begun, the wrinkling, whiteness, and sogginess disappear. The pain leaves, but the soles remain tender. In 3 to 6 days, the tenderness diminishes, and the thick stratum corneum begins to peel.

TYPE 2- "WARM WATER IMMERSION FOOT" or "PADDY FOOT"

Type 2 "warm water immersion foot" or "paddy foot" is common when soldiers continuously stand or wade through creeks, streams, and canals. Proper drying of the skin is prevented because the exposure is almost constant. This type of dermatitis involves the tops of the feet, the ankles, and the legs to the tops of the boots and socks.

Symptoms

"Paddy foot" begins to affect soldiers in 48 to 60 hours. The skin turns red, a cellulitis appears, and a great deal of swelling develops.

Pressure over the top of the foot and the instep produces pain. There may be many tiny vesicles and bruises scattered over the skin and superficial raw spots or erosions, from one-eighth to one-half inch (3 to 13 millimeters) in diameter, may appear.

The swelling does not dent (pit) on pressure and the area is hard to the touch.

Click here for

Type 2 immersion foot (swelling does not pit).

Type 2 immersion foot (swelling does not pit).

Two cases of Type 2 immersion foot (note tiny vesicles, bruises, and erosions).

The vesicles, bruises, and erosions may be present singly or in combination.

Click here for

Type 2 immersion foot with tiny bruises and erosions.

Type 2 immersion foot with tiny bruises and erosions.

Rubbing of the boot against the soggy skin may cause large deep raw spots or abrasions to appear.

Click here for

Type 2 immersion foot (note large abrasions from rubbing of boot and foreign material).

Type 2 immersion foot (note large abrasions from rubbing of boot and foreign material).

Occasionally, the abrasions and erosions become infected with bacteria or fungi. The soles are usually free of disease and are not painful, but they may be white and mildly wrinkled. About half of the soldiers develop tender, swollen lymph nodes in the groin *(femoral lymphadenopathy–fem'-or-al lim-fad-e-nop'-ah-the);* others have a temperature of 100° to 102° F (37.7°to 38.8°C) norally. Some soldiers never develop this type of warm water immersion foot.

Treatment

Treatment procedure dictates drying of the skin and bedrest with head flat and feet elevated. Patients should not sit on the bed or chairs even with their feet up. They may, however, be permitted to go to the latrine and dining facilities. Within 6 hours, after treatment is started, the edema is soft and pitting (it dents upon finger pressure). The pain, edema, vesicles, lymph node swelling, and fever subside within 48 to 72 hours. The skin then begins to scale off, and does so for the next week.

Prevention

Having the skin of the feet and legs dry for 10 hours at night will prevent "paddy foot" in nine out of 10 soldiers. Limiting a combat operation in a wet, muddy area to 48 hours, followed by a drying-out period of 24 hours, also will reduce the number of "paddy foot" immersion casualties to a low level.

TYPE 3

Type 3 occurs when soldiers have to wade through water to their waists and very often to their necks. Their clothing may stay wet for hours or days.

Symptoms

The skin of the groin and the inner thighs shows damage from prolonged wetness and rubbing of the skin by the trousers. It becomes very red and painful.

Treatment

The treatment permits the skin to dry.

Prevention

Prevention entails allowing the skin to dry before the dermatitis begins.