

## “SPEKK-FINGER” OR SEALER’S FINGER

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“**S**PEKK-FINGER” (blubber-finger) is the Norwegian name for a severe type of finger infection (cellulitis), which is common among persons engaged in arctic sealing. The disease is of considerable practical and financial importance to the sealing industry, since it may incapacitate a worker for several weeks at the height of the season.

“Spekk-finger” was first described in Norway by Bidenknap in 1907, but it has been known to Scandinavian sealers for generations. The name indicates that the disease is thought to have some connection with the blubber and it is generally attributed to an infectious agent in the seal. According to sealing captains the old seals are particularly likely to cause the infection and “spekk-finger” is said to be more common late in the season when the catch consists mainly of old seals. While it usually occurs among those skinning and handling the seals on the pack ice, or hauling skins and removing the blubber from the skin on board the sealing vessels, it may also occur among those handling seals or unsalted sealskins at sealing stations ashore. The condition is sometimes referred to as “seal finger” or “sealer’s finger”.

Recent figures show that “spekk-finger” is very common in the Norwegian sealing fleet (Waage, 1950). In 1950 over 10 per cent of the crew of the Norwegian sealing fleet working off Spitsbergen suffered from the disease. It appears to be less common in the sealing fields off Newfoundland and east Greenland, where only 2.5 per cent of the crew suffered from the disease in 1950. Here the catch consists mainly of young seals taken during the early part of the season.

“Spekk-finger” is also reported to be common in the Gulf of Bothnia (Candolin, 1949). In Greenland the east Greenlanders appear to possess some immunity (Høygaard, 1939), but Dr. A. Laurent-Christensen (personal communication, 1952) mentions seeing several cases of a similar infection among west Greenlanders, which they believed was caused by handling the “Redfish”, *Sebastes marinus*, a deep-water fish. According to information obtained from Eskimo in Alaska severe hand infections resembling “spekk-finger” appear to be frequent among the coastal Eskimo. Although the disease apparently does not occur among antarctic whaling crews, where other infections are common, two cases have been reported during sealing in the Antarctic (Liavaag, 1940). A similar condition has also been observed among fishermen in Norway, among butchers in Canada, and among workers handling frozen meat at a bacon factory in south England.

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A typical case of "spekk-finger".

### Symptoms

The clinical appearance may be described as follows: a sudden extremely painful swelling of the finger occurs, and the skin becomes reddish with a somewhat taut and shiny appearance. The affected area is soft and swollen due to a thick colourless fluid; in most cases there is no pus. The patient complains of severe local pain and stiffness in the neighbouring joints. Throbbing is very marked. In many cases the whole arm becomes swollen, and the axillary lymph glands may also be affected. Slight fever and increased sedimentation rate have been observed in "spekk-finger" patients (Waage, 1950). Permanent damage to the finger bones attributed to this condition has been demonstrated roentgenologically by Mathiesen, Häupl, and Thjötta (1935).

### Cause of the disease

The etiology and pathogenesis are not as yet established. The infectious agent is presumed to enter the finger through small cuts in the skin, and the symptoms may develop after an incubation period varying from 3 to 21 days.

Several pathogenic organisms have been isolated by different investigators, without it being possible to establish their etiological role. Thjötta and Kvittingen (1949) isolated a red pigment producing micrococcus from two cases of "spekk-finger". The organism was markedly halophilic, and the cultures were non-pathogenic to ordinary laboratory animals such as guinea pigs or rabbits.

The resemblance of "spekk-finger" to erysipeloid has been emphasized by several workers, and the possibility that the infection may be caused by *Erysipelothrix rhusiopathiae* has been suggested by Dr. W. L. Jellison (personal communication, 1951). This organism, which is the cause of swine erysipelas, is known to cause infection in butchers and handlers of pork products and among fishermen along the Atlantic coast of the United States. Svenkerud, Rosted, and Thorshaug (1951) have described a disease in seals which they claim to be similar to swine erysipelas. It manifests itself by the presence of multiple haemorrhagic infiltrations in the subcutaneous blubber of the seal. Cell infiltration and small areas of necrosis were observed. The lesions may heal without leaving any trace, or small scars and pigmented spots may persist in the blubber tissue. In some cases they were able to isolate a gram-positive rod-shaped bacterium which was not pathogenic to the ordinary laboratory animals, including pigeons and pigs. They considered that the organism might be "referred to the family of *Corynebacteriaceae* Lehmann and Neumann and should be called *Corynebacterium phocae*."

Dr. J. M. Olds of Notre Dame Bay Memorial Hospital in Newfoundland (personal communication, 1951) has made cultures from seals on two expeditions to the Newfoundland sealing fields. He states: "In practically all cases I have recovered a very small Staphylococcus from the palpebral fissures, various other organisms from the hair and nose. As the seal finger usually occurs on the second or third finger, I think it likely that it could be caused by the men stowing away the pelts by inserting these two fingers in the palpebral fissures and dragging the pelts. I have amputated numbers of these fingers and cultured them both here and had them done in the Public Health Laboratory, and invariably it is morphologically the same organism."

### Treatment

Amputation of the infected finger was often necessary until recent investigations showed that the condition could be successfully treated with modern antibiotics. In the past the sealing captains usually followed one of these treatments:

1. A covering bandage was saturated with camphor oil and kept in place for one or two days at a time according to the severity of the infection. A partial destruction of the tissue took place followed by healing.
2. White wheat flour was made into a paste with alcohol and spread on the infected finger. This treatment was less radical and less effective.
3. A thick layer of soft soap (sometimes mixed with ordinary washing soda) was spread on the infected hand. The covering bandage was saturated with hot water, and the whole hand or finger was from time to time placed in very hot water. Naturally, this treatment was extremely painful, but apparently quite effective.

In 1941 I treated six cases of "spekk-finger" successfully with "Rivanol" (2 ethoxy-6, 9, diaminoacridine lactate) solution while on an expedition to the sealing fields off Newfoundland (Rodahl, 1943). In one severe case sulfanilamides were applied in addition to the "Rivanol" treatment with fairly good results. In recent years penicillin has also been used in the treatment of

"spekk-finger" (Knap, 1945; Mathiesen, 1945). Waage (1950) treated 20 cases with aureomycin in 1950 and recommended that 12 to 16 doses of 250 mg. aureomycin should be given at 6-hour intervals. Following the first 3 to 4 doses the pain appeared to decrease markedly, and the recovery of those patients who did not have bone damage appeared to be complete one to two weeks after the conclusion of the aureomycin treatment. Olds (personal communication, 1951) has used penicillin, and also aureomycin in the treatment of "spekk-finger" and he writes: "Lately penicillin, and better, aureomycin, have saved many fingers."

Although treatment has been improved it is very desirable that a systematic study should be made of the nature of "spekk-finger". In order to follow all stages it is essential for the investigator to examine this infection in the field. This is often difficult on sealing vessels operating in the pack ice, as facilities are usually inadequate. While studying other problems in Alaska it occurred to me that if "spekk-finger" existed among the sealers on the Pribilof Islands it would provide a very good opportunity to study the condition as there is a biological laboratory in the village of St. Paul. I therefore paid a visit to the sealing station during the killing season in July 1951, where I saw a typical case of "spekk-finger" and was told of two previous cases among the biologists employed on research work.

#### **Description of a case of "spekk-finger"**

The patient was a 23-year-old biologist engaged in collecting specimens of both young and old seals (*Callorhinus ursinus*), such as snouts for odontological age determinations and tags from seal flippers, and in cleaning skulls and removing blubber from the skins. The sealers on the Pribilofs usually handle only 3-year-old males, in which infections are rare, while this biologist had also handled old bulls with heavily infected wounds and scars in their skins. Some time prior to the development of "spekk-finger" he had extracted a tooth from a seal which was infected with an apical abscess containing pus. It should be mentioned that he never wore gloves during his work.

On July 8 the biologist noticed an inflamed pinkish spot the size of a small pea on the ventral side of the first phalanx of the middle finger on his right hand. This spot was tender when touched, while the rest of the finger was painless. Three days later the entire finger was swollen. The pain was confined to the small pinkish area. The following morning one of the other biologists probed the finger with a scalpel, but no foreign body or pus was detected.

On July 14 the swelling became marked and the patient had severe pains in the finger particularly when stretched. By this time the whole finger was greatly swollen, the swelling extending to the knuckles of the metacarpal-phalangeal joints. The following day the first phalanx became reddish in colour; the patient was afebrile. Dr. Edwin Wilde, physician of the U.S. Fish and Wildlife Service, thought there was a deep-seated infection, so he made a deep incision in the middle of the ventral side of the first phalanx. It

bled profusely, but no pus was observed. Ichthyol was applied locally, and 400,000 units penicillin were given intramuscularly, as well as two sulfanilamide tablets every four hours.

When I examined the patient the following day, July 16, no localized tenderness could be detected, but attempts to straighten the finger caused severe pain. The finger was nearly twice normal size and the swelling also involved the dorsal side, including the soft tissue over the knuckles. There was a slight bluish-pink discolouration on the dorsal side of the finger.

The penicillin and sulfanilamide treatment was continued, but the symptoms progressed with increased swelling and severe constant pain. The patient stated that it felt as if the pain was seated in the bone. By July 18 the entire hand was swollen. Aureomycin was now given (1 gram daily), in addition to penicillin. A slight improvement was observed and by August 5, twenty-nine days after the first symptoms, the hand had returned to normal.

Histological examination of a tissue specimen taken from a drainage incision eight days after the first manifestation of clinical symptoms showed hypercornification and squamous cell thickening associated with chronic, non-specific inflammation of the dermis. In this connection, it may be mentioned that histological examination of a section from a deep infected wound in an old bull seal showed an active and chronic non-specific inflammatory reaction with leucocyte infiltration in the upper layer of the ulcer bed. Microscopical examination showed large numbers of small cocci and a very small number of gram-positive rod-shaped bacteria which morphologically resembled the organism described by Svenkerud, Rosted, and Thorshaug (1951).

### Prevention

Although "spekk-finger" has never been reported among the natives on the Pribilof Islands, I was told that they consider finger infections occurring during the handling of seals to be very malignant, and great care is always taken to treat cuts and wounds in the hand during the sealing season.

The reason for the rare occurrence of "spekk-finger" among the sealers on the Pribilof Islands, as compared with sealing crews operating in the pack ice, may be as follows: better conditions for personal hygiene; better facilities for immediate treatment of cuts and wounds on the hands during the handling of the seals; different technique in the killing and skinning of the seals and in the removal of the blubber from the skins; and finally the fact that only young seals are handled.

As "spekk-finger" is extremely painful and may incapacitate the patient for several weeks, possibly even resulting in ankylosis and loss of function, it is important to take all possible precautions against the infection. In the case of sealing crews operating in the pack ice, sufficient hot water and soap and effective disinfectants should be readily available to enable the crew to wash their hands as often as possible. Small wounds and cuts should be promptly treated and adequately protected from direct contact with the seals. General experience is that "spekk-finger" occurs most frequently among the

men who take little personal care, and who seldom wash their hands. The work on the ice often makes it impossible, however, for the crew to wash their hands until the end of the day. Washing is also frequently difficult for northern travellers, but it should be remembered that aged seals are particularly likely to cause the infection and that the earlier a case of "spekk-finger" is recognized, the greater is the chance of healing without complications.

Although "spekk-finger" is extremely rare among the sealers at the Pribilof Islands, and thus represents no serious problem at this station, the fact that it does occur offers an excellent opportunity for further studies of the nature of this disease.

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