The Effects Of Hair On Infection In Craniotomy

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Abstract : 142 patients who were operated on Department of Neurosurgery during a 21 month period without removal of hair were examined prospectively with regard to the effects of hair on wound sites. Craniotomy was carried out on 124 patients and shunt procedures on 18 patients. No infection was detected in our patients.

Key Words: Hair, Neurosurgical Wound Infections, Shaving.

INTRODUCTION

That the presence of hair in surgical areas increases the risk of infection is the most common idea, accepted by not only neurosurgeons , but also by all surgical clinicians. Recently, shaving of hair for the preparation skin for operation has been under discussion and also it has been shown that hair wound incisions even lower the risk of infection (12).

Removal of the natural protective effect of hair against bacterial contamination, exposure of scalp to minor traumas, shaving and changing of wound flora are the main causes of a increase in the risk of infection (1,4).

142 patients who were operated on in our department during a 21 month period without removal of hair were examined prospectively for the effects of hair on wounds.

MATERIALS AND METHODS

This study was carried out prospectively at the Department of Neurosurgery in Uludağ University. Initially 142 patients who were admitted to neurosurgery department and were operated on for various reasons between August 1992 and May 1994 were the subjects of our study. 136 patients were operated on once and six of them twice. The same procedure was also carried out in the second operation. There are 142 patients, 65 females and 77 males, ranging from 1 month to 77 years old. Four of them were operated on for the replacement of bony flaps and two of them were operated on twice for removal of epidural haematomas.

Craniotomy was carried out on 124 patients and shunt procedures on 18. No hair was shaved for surgery. Their hair was washed with 4% Chlorhexidine within the 24 hours before surgery. The hair on the operation site and that which was sufficiently long to reach the operation site was cleaned with 10% povidon iodide before operation by using a soft brush for 8-10 minutes. After having been dried with a sterile compress, it was again washed with bacitracine solution. The incision site was determined by parting the hair with a sterile clamp. Disposable covers and shirts were used in all operations. All the patients were covered with sterile gowns before the incision. After the incision, the edges of the scalp were secured with scalp clips in such a way that hair wouldn't enter the operation site and the scalp clips would hold gowns secure also. After the operation, while closing the operation site, particular attention was given to the avoidance of trapping hair in the

surgical knots. In the six patients operated on twice, there was no hair between the scalp edges. 2 gr/d Seftriakson, the first dose of which should be given during the operation, were given intravenously to all patients for 3 days. Prophylactic antibiotics were not changed for any patients for fear of infection or any other adverse side effects.

A vacuum drainage device was inserted under the scalp of all patients who had undergone craniotomy and adhered to the scalp by suture. These drainages were removed after approximately 24 hours. Scalp clips or drainages were not used in the shunt procedures.

A head netting was used in all operations for dressing, and sterile sponges were loosely placed between the head netting and the surgical wounds. No plaster was used. Approximately 24 hours later, the wound site was exposed. Hair was shampooed and combed so that the patient had the same hair style as before the operation. (Fig 1 and 2). Sutures remained in situ for 7 days.

Fig. 1 : The appearance of the wound site 24 hours later.

Fig. 2 : The appearance of the wound site after combing hair.

RESULTS

The wound site was examined each day during the first week and later weekly. Seven patients died from various causes during the study period, but no trace of infection was detected.

DISCUSSION

In 1980, Cruse and Foord reported on 62 339 prospectively studied surgical wounds and found the infection rate among clean wounds to be 2.5% when the operative site was shaved with a razor, 1.4% when shaved with an electric razor and 0.9% when there was no shaving (1).

For patients undergoing a craniotomy, Zenther et al found that 5.5% of 237 patients having had a standard wet shave, 3.2% of 93 patients having had a dry shave and 2.8% of 145 patients having had their hair removed by cuppers developed a surgical infection (13).

Howell and Morgan observed no wound infections in 68 scalp lacerations repaired without the removal of hair (5).

In our study, 142 patients were operated on without the removal of hair. In all patients, the resultant surgical site is a clean wound according to CDS guidelines (2,3).

Consistent with literature, infection criteria were evaluated as follows, pus was observed flowing from the operation site, positive culture formation occurred, postoperative bacterial meningitis and inflammation in the wound site occurred (10).

Neither pus in the wound site nor increase in fever were observed in our patients. No reproduction was observed in drainage or lumbar puncture cultures.

In literature, antibiotics by different routes and in different forms have been proposed (6,10,11). 2 gr/d of Seftriakson, the first dose of which should be given during the operation, was used in our operations, intravenously. A prophylactic antibacteria was administered in our Shunt procedures.

It has been claimed in various publications that shaving of hair in surgical areas doesn't show correlation between hair-shaving and infection and even increases the risk of infection (7). Exposure of scalp

to microscopic trauma during shaving, changing of bacteria flora during shaving and the formation of pathological flora support that view (4.7.8.9).

It is hoped that, as a result of our having proven in this study that we have found no infection related to nonshaving in our monitored case studies, hair scalp incisions will, in future, be more frequently performed.

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