

**TECHNICAL BULLETIN**

**PSEUDOFOLLICULITIS OF THE BEARD AND ACNE  
KELOIDALIS NUCHAE**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**  
**1 SEPTEMBER 2000**

# PSEUDOFOLLICULITIS OF THE BEARD AND ACNE KELOIDALIS NUCHAE

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\*This bulletin supersedes TB MED 287, 1 January 1983.

## Section I. General

### 1. Purpose

This technical bulletin provides information with respect to the diagnosis and medical management of pseudofolliculitis of the beard (PFB) and acne keloidalis nuchae. It is specifically intended to assist medical officers in the proper management of active duty and reserve component soldiers who are afflicted with these conditions.

### 2. References

Referenced publications and forms and a selected bibliography are listed in appendix A.

### 3. Explanation of abbreviations and terms

Abbreviations and special terms used in this bulletin are explained in the glossary.

## Section II. Pseudofolliculitis Barbae

### 4. Introduction

*a. Synonyms.* PFB is also known as pili incarnati, chronic scarring pseudofolliculitis of the beard, and ingrown hairs of the beard.

*b. Definition.* PFB is a chronic papulopustular dermatitis of the bearded area resulting from reentry penetration of the epidermis by the growing hair.

*c. Epidemiology.* Although it may occur in any male with curly hair, the black man's genetic predisposition to tight coiling makes him particularly susceptible to this condition. Severe forms are usually encountered only in this race; however, they may also be seen in individuals of Mediterranean descent. The association with shaving, particularly close shaving, is widely accepted. The exact incidence is unknown but the condition, particularly in its mild forms, appears quite common in black men. Clinical impressions are that many patients have fathers and or brothers with this problem. This observation suggests that PFB does not disappear at some specific age.

*d. Military considerations.*

(1) Standards of appearance, as specified in current Army regulations, do not permit the active duty member to exercise the option to wear a beard. Since PFB often becomes apparent only following a period of regular shaving, the majority of men with this condition have had insufficient cause to develop this problem before entering military service.

(2) The medical management of PFB (see para 7) often necessitates the wearing of a beard during some phase of treatment. The commander is acutely aware of the bearded military patient when he appears in sharp contrast to his clean-shaven counterpart. This encounter can create problems if all parties concerned fail to recognize the necessity for medical treatment. This is a particularly sensitive area in interpersonal relations because it commonly concerns a minority (the bearded soldier-patient) within a minority (the black man).

(3) Problems related to morale and discipline should not influence a medical decision for proper treatment of the military patient. The well-motivated soldier within

an informed military community should not create problems relating to morale and discipline because he is receiving legitimate medical therapy.

(4) Army Medical Department (AMEDD) personnel must work with both the military community and the patient to ensure an environment within which proper treatment of PFB can exist in harmony with the traditions and discipline of the military community.

(5) Individual military patients who exceed the medical authorization required for treatment must expect the same discipline as their cohorts. This is a command responsibility.

### 5. Pathogenesis

*a. Anatomical factors.* The direction of hair growth in the curved pattern of hair growth is the principal characteristic which initiates the process. The hair emerges almost parallel to the skin and immediately turns in the direction of the epidermis. The arc continues with penetration into the skin as if to complete a full circle. The external portion of the hair from exit to reentry is usually short, averaging 2 millimeters (mm) in length. As the tip proceeds into the dermis, epithelial cells incompletely form about the shaft forming a pseudofollicle. The resistance increases and penetration gradually ceases, ending at about 2 or 3 mm into the skin. Further growth will result in a loop over the surface of the skin. The inflammatory reaction produces the papules, and in a continuing spectrum, the pustule (fig 1). Additionally, if untreated, large cysts may occur containing one or more curled hairs.

*b. Mechanical factors.* When the tip of the emerging hair is cut sharply, penetration is facilitated. Two situations exist in which the emerging hair penetrates the wall of the follicle rather than arcing across a portion of skin prior to reentry. The first situation occurs when the skin is stretched during shaving (that is, a "barber close shave"). When the skin is released, the tip of the growing hair lies beneath the surface and grows in an arc through the follicular wall. A second similar situation may follow the plucking of individual hairs.

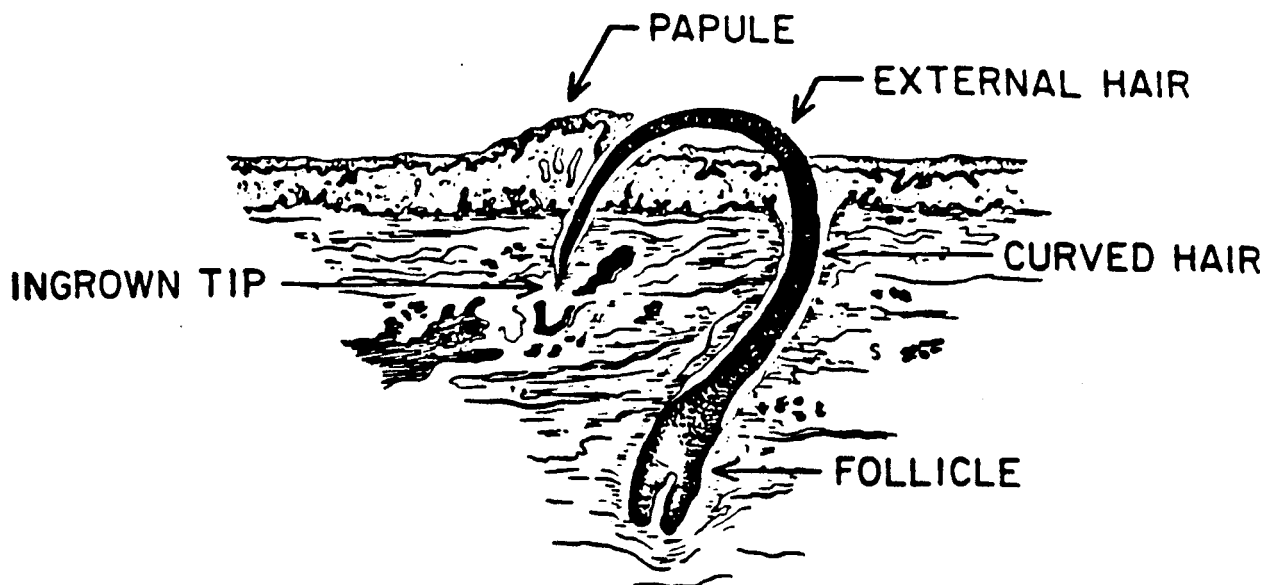


Figure 1. Pathogenesis of pseudofolliculitis barbae

*c. Infectious factors.* Pathogenic bacteria do not appear to influence the uncomplicated course of PFB. Cultures from pustules reveal the normal flora of the skin rather than the pathogenic staphylococcal organism usually noted in true bacterial folliculitis.

## 6. Clinical approach to the patient

PFB is a common problem in black men, although it is seen in all races. The papules are subjected to denudation with shaving, increasing inflammation and patient discomfort. The process is particularly prone to occur in the submandibular area because of the density and direction of growth. Because of these factors, hair in this region is subjected to a closer cut. Once the condition has developed, it will persist indefinitely as long as the patient shaves daily in his usual manner. Treatment is, therefore, directed toward clearing the dermatitis and instituting measures to prevent recurrence. The management is clearly related to the severity of the condition and varies in relation to the extent of disease.

## 7. Management techniques

*a. Close shaving.* Close shaving and plucking the individual hairs are contraindicated for the reasons outlined in paragraph 5b. If such procedures are followed, a transient improvement may be noted, only to be followed by an intense exacerbation as the hairs penetrate the follicle wall during regrowth.

*b Adequate time for shaving.* One of the most important methods of management is to allow adequate time to shave carefully. Shaving in a hurry often leads to close shaving, nicking of papules, and inattention to post-shave therapy. It is recommended that the soldier shave the night before, thus allowing adequate time for the pre-shave, shave, and post-shave phases to be executed properly. The soldier will experience the beginnings of a "5 o'clock shadow" shortly after noon the following day.

*c. Dislodgement.* Dislodgement of the ingrown tip is desirable since it will hasten resolution of inflammation. Individual hairs, if seen, can be manually dislodged by inserting a toothpick or similar instrument under the loop (never into the skin). A measure for more general treatment utilizing this principle is the use of a rough washcloth (for example, terry cloth). Rubbing such a cloth across the beard area, in clockwise and counterclockwise circles, will facilitate the release of embedded hair tips.

*d. Preshave methods.* The pre-shave period is as important as the shave itself. It is here that the beard area is prepared. The face should be washed with warm water. This allows for hydration of the hair shafts and softens the skin overlying the ingrown hairs. It is during this phase that dislodgement with the washcloth can be performed. Once the face is adequately hydrated, one of several pre-shave medications may be applied. A pre-shave/after-shave lotion containing aloe vera,

propylene glycol, dimethicone, and vitamin E as its major components, or a hydroglide shaving solution and moisturizer which is predominantly propylene glycol may be used. These products are available in most post exchanges. The pre shave is applied and allowed to remain on the face. This creates a glide surface for the razor and protects the skin if depilatories are being used. A medicated shaving gel is then applied directly over the pre shave. A study showed that the two used together outperformed either alone when used with other techniques.

*e. Razors.* Previously, razor shaving was discouraged due to the cutting of hairs too closely and the nicking of papules. There are appropriate razors available in most post exchanges for use with this condition. This single blade system has a foil guard to protect against shaving too closely and against nicking existing papules. The razor is used no more than five shaves before it becomes dull and must be discarded. Shaving is accomplished by using gentle even strokes in the direction of beard growth. The same area should not be shaved over more than once. The skin of the face and neck should not be stretched beyond normal. The razor should be rinsed with cool water between strokes. This protects the blade from becoming prematurely dull.

*f. Waterless shaving.* This method, also known as dry shaving, utilizes any one of several shaving lotions which contain alpha-hydroxy acids or waterless soaps. After the face is washed and dried, the lotion is applied, and a razor shave is performed. No pre shave or shave gel is applied in this method. The remaining lotion is washed off after the shave is complete. This method is particularly useful in areas where supplies of water are limited (that is, deployment and field environments). During a "Usage Trial" conducted at Fort Sam Houston, several of the waterless shave products were tested. They were generally well accepted by participants; however, numerous soldiers complained of facial irritation and a stinging sensation after using lotions containing the alpha-hydroxy acids.

*g. Depilatories.*

(1) *General.* Previously, a mainstay of therapy was the use of a chemical depilatory to produce a blunt hair end which is less capable of penetrating the skin. Usually 6 weeks of depilatory usage is necessary before its effectiveness can be ascertained. With few exceptions, any use of a razor during this period (blade, electric, or so-called black razor) completely obviates the benefits of a chemical depilatory. Proper use of the depilatory, as outlined below, must be emphasized and reemphasized to the patients since misuse results in burning, itching, and, occasionally, more severe reactions. Many patients have now been found to be sensitive to various components of the depilatories. Even in the absence of symptoms, the chemical depilatories have low patient acceptability because of a strong sulfide odor and or a messy application procedure.

(2) *Use of barium sulfide powder.* The barium sulfide is in approximately 2 percent strength adjusted to pH 11 with calcium hydroxide. Most post exchanges stock such a product. The patient must be instructed in directions for use as follows.

(a) The barium sulfide powder is mixed to a watery consistency and applied thinly to only one-half of the beard area.

(b) Three minutes after the start of the application, a spatula or tongue blade is used to remove the paste. The removal instrument should be kept moistened with water and continually wiped free of paste with disposable tissue paper. Strokes should be short, rapid, and in the direction of hair growth. If hair from heavier bearded areas remains following the first few strokes, repeat the process after waiting an additional 30 to 60 seconds.

(c) When the paste is removed, rinse that half of the face thoroughly and rapidly three times using soap between rinses. Barium sulfide is difficult to rinse from the face. The longer the paste remains in contact with the skin, the greater the irritation it will produce. The same procedure is performed on the other half of the beard area. If irritation still develops, the patient should limit barium sulfide to one third of the bearded area at a time until he becomes proficient in the removal technique.

(d) To alleviate the irritation sometimes caused by such agents, a wet dressing (for example, washcloth and cool water) may be held against the face for 3 to 5 minutes, followed immediately by the application of a corticosteroid cream over the involved area. Additionally, a cream depilatory is available which does not require mixing and is less irritating than the original formulation. It, too, is available in post exchanges.

(3) *Use of calcium thioglycollate preparations.* Many commercial depilatories contain calcium thioglycollate. Directions for use are as follows.

(a) A thick layer of cream is applied, covering all hair to be removed (in the same manner as that described for barium sulfide) and spread evenly against the direction of hair growth. Disposable gloves may be worn, if desired.

(b) After waiting 10 to 15 minutes for any one area, the cream is removed with a spatula or tongue blade. To ensure complete removal, that portion of the face should be rinsed thoroughly and rapidly three times, using soap between rinses.

*h. After-shave techniques.* The application of a good after-shave preparation is equally important in the treatment process. Several after-shave creams are available in the post exchanges. One product has resorcin, bromelain, and vitamin A (150,000 International Units) as its active ingredients. The vitamin A acts as a keratolytic agent, keeping skin from overgrowing the hairs which are attempting to grow back into the skin. The other two components act as anti-inflammatory agents.

Another product, a cream, uses sulfur as its main ingredient. In these products, the sulfur imparts both anti-inflammatory and keratolytic properties. Some clinicians advocate the use of the alpha-hydroxy acid lotions; however, these may be irritating to freshly shaven skin.

*i. The next morning.* On the morning following the shave, the face should be washed with a good mild soap and patted dry. A liberal amount of an emollient moisturizing lotion should be applied to the beard area. It is here that the alpha-hydroxy acid preparations have the most benefit. The alpha-hydroxy acids act as a very mild chemical peel and remove built-up skin cells as they moisturize the skin. This moisturization keeps the hairs and skin soft, making repenetration difficult.

*j. The break period.* It is critical that the face be given a periodic break from the harsh effects of shaving. If duty allows, the soldier should refrain from shaving on the weekend or off-duty days. This will give the facial skin time to recover and allow any additional therapies to take effect.

## 8. Guidelines for treatment in relation to clinical severity

*a. Mild condition (few, scattered papules with scant hair growth of the beard area).* Initially, a trial of shaving every third to every other day with an appropriate PFB razor may be initiated. The medicated after-shave creams

should still be used on a daily basis. Once the condition improves, resume shaving on the regular nightly schedule.

*b. Moderate condition (heavier beard growth, more scattered papules, no evidence of pustules or denudation).* For moderate PFB, tretinoin 0.025 percent cream or gel may be used as a substitute for an after-shave. The soldier should be advised to let the face dry for 10 to 15 minutes prior to application of tretinoin. Only a "pea" sized amount is needed to cover the beard area. Shaving should again be spaced out over a 2 to 3-day period and nightly intervals resumed when the condition improves. A chemical depilatory can be used as a substitute at this point. This, however, should be reserved for failure to improve on the medication regimen. Instruct the patient with directions as discussed in paragraph 7g.

*c. Severe condition (many papules with pustules and or denuded areas).* The patient should allow beard growth (for profile limitations, see para 9) and be observed for resolution of the PFB process. Clearing usually occurs within a month, although a few remaining papules may require that the ingrown tips be mechanically dislodged as described. An initial worsening may appear the week following the discontinuation of shaving since all hairs are now available for reentrance into the skin. Following this initial paradoxical response, the dermatitis will go into remission. The mechanical reasons for beard growth as a treatment are illustrated

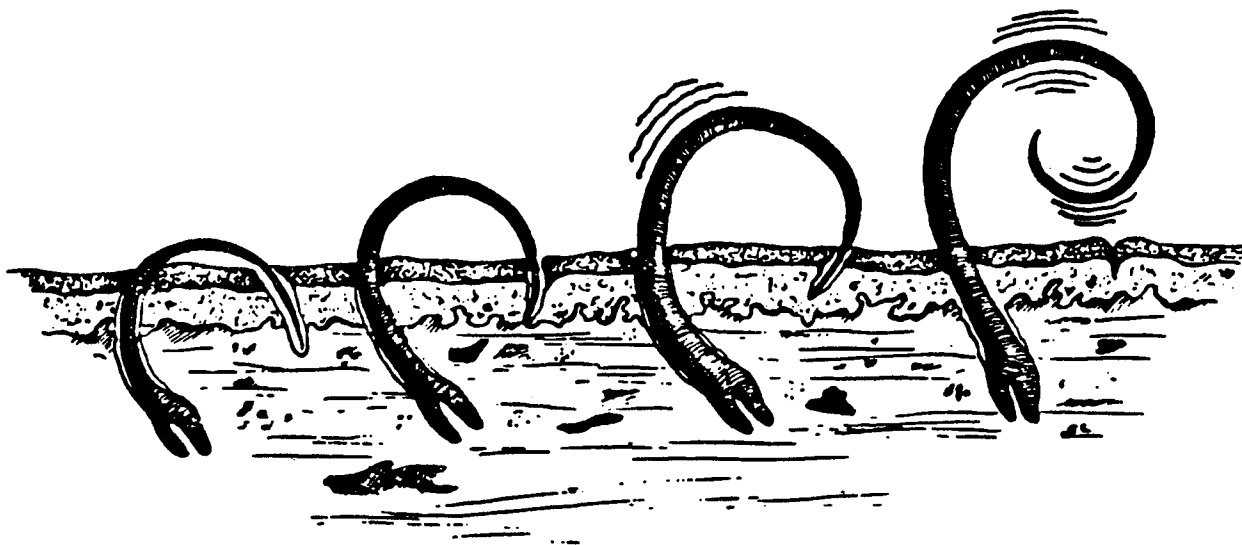


Figure 2. Allowing the beard to grow may release ingrown hairs and, thus, may be part of the treatment of pseudofolliculitis barbae

in figure 2. At this point, a gel containing 5 percent benzoyl peroxide (BPO) should be applied to the just-washed face and allowed to dry for 5 to 10 minutes. One percent hydrocortisone cream, can then be applied to the affected areas. The BPO acts as a topical antibiotic and has anti-inflammatory effects. The weak steroid creams also impart anti-inflammatory effects and decrease skin cell growth over the papules/pustules. When the PFB is no longer evident, hair removal should be resumed according to instructions listed under moderate condition (para *b* above).

*d. Progressive disease.* Patients who demonstrate severe adverse reaction and progression of the disease following all methods of hair removal should be allowed to increase their hair length. The length of the hair required to prevent PFB is not great. Usually one-eighth to one-fourth inch is sufficient. The profile given to the patient should specify the maximum length of beard that is necessary. The length should not exceed one-fourth inch unless the physician giving the profile specifically states that a beard longer than one-fourth inch is necessary. In all cases, the maximum length should be stated. This one-fourth inch length refers to the total measurement of the curled hair. Hairs should be kept trimmed with electric clippers (not electric razors). Virtually all individuals with PFB will require profiling of the entire face and neck area at some point in therapy. The frequency of shaving should be specified by the appropriate physician, dermatologist, or physician assistant (for example, once weekly, etc.). The profile should clearly state, to the commander and the soldier, the method of treatment, frequency, method of shaving permitted, and maximum length of hair that is necessary for treatment. No styling is permitted.

## 9. Profile considerations

*a. General.* According to AR 40-501, DA Form 3349 (Physical Profile) must be issued for active duty personnel when beard growth is required during treatment of PFB. This record functions as a means of communication between the medical facility and the patient's commander, informing the latter of the member's physical condition. For temporary profiles, three copies are necessary: original and one copy to the unit commander and one copy in the health record. For permanent profiles, four copies are necessary: original and one copy to the unit commander, one copy in the health record, and one copy in the clinic file. **THE PATIENT WILL ALSO BE GIVEN A COPY. THE UNIT COMMANDERS' COPIES WILL BE DELIVERED BY MEANS OTHER THAN THE PATIENT.** (See AR 40-501.)

*b. Designation.* A patient with PFB will not ordinarily require a restriction in duty or assignment. While under the treatment, his appearance may differ from that prescribed in current Army regulations. For this reason, the numerical designation "2" will be uti-

lized under the "P" factor of the "PULHES" profile system. The nature of the profile will be further identified as temporary or permanent.

(1) *Temporary profiles.* This form of profile is used during treatment of PFB, such as in clearing a severe condition prior to resumption of hair removal, when a short period of beard growth (generally less than 6 weeks) is required. Cases requiring longer periods to clear are usually management problems and a dermatologist should be consulted who will ordinarily initiate the appropriate profile.

(2) *Permanent profiles.* A permanent profile requires a physical profile board whose proceedings are recorded on DA Form 3349, to include a signature of three physicians knowledgeable of the patient's condition. A dermatologist will normally be a member of the board when considering a patient with PFB. This profile is utilized when the patient's condition is progressive and must be confirmed periodically, particularly in conjunction with inpatient or continuing outpatient care. In most cases, the conditions that require wearing of a beard do not improve. Therefore, once a permanent profile authorizing a beard is given, it normally will not require frequent reevaluation. However, such a reevaluation can be done when a commander requests it or when there are indications of a change in the clinical situation.

*c. Use of protective masks.* The beard growth which may be required as a treatment for PFB will not interfere with the safe utilization of the new M-40 protective mask. Long beards will reduce the protection provided by the mask. The exact amount of the loss in protection is not fully documented.

(1) The existence of a beard does not prevent performance of most military duties. Therefore, the fact that a profile is awarded authorizing the growth of a beard should not ordinarily require any change or limitation in the performance of military duties.

(2) A more common occurrence might be that a soldier with a beard may enter a tactical situation where use of the protective mask is required. This problem can be handled within existing rules because a unit commander has the authority to require that a soldier's beard be shaved if the unit is in, or about to enter, a situation where use of a protective mask is required, and where inability to safely use the mask could endanger the soldier and the unit. This authority should not be used to require that a soldier be clean-shaven for maneuvers and other tactical simulations. It should only be used when there is an actual need to wear the protective mask in a real tactical operation. A soldier with a profile authorizing a beard should continue to wear the beard while using a protective mask in all training and tactical simulations where a protective mask is required. This will ensure that he is fully familiar with its use. However, if there is an actual danger of exposure to a toxic environment, then the soldier can be required to shave the beard.

## 10. Summary

Currently, depilatories, topical creams, and so-called PFB razors do not offer a permanent definitive answer for PFB and, at best, only temporarily ameliorate the underlying problem. Any male patient determined to have PFB or ingrown hairs of the beard treated by an Army physician, dermatologist, or physician assistant may be given an appropriate beard profile. This beard must be uniform, neatly trimmed, and normally will

not exceed one-fourth inch in length. Virtually all individuals with PFB profiles will require profiling of the entire face and neck area, and this determination should be made by an appropriate physician, dermatologist, or physician assistant at the nearest medical facility. Finally, and most importantly, it is implicitly understood that any individual possessing a beard will wear it at a length that makes him combat ready at all times.

## Section III. Acne Keloidalis Nuchae

### 11. Introduction

*a. Synonyms.* Acne keloidalis nuchae is also known as keloidal acne, dermatitis papillaris capilliti, and folliculitis keloidalis.

*b. Definition.* Acne keloidalis nuchae is a chronic disorder affecting the posterior scalp and upper neck and arises from a process similar to PFB. The major difference between the two is that in acne keloidalis, the longstanding process leads to scarring and keloid-like thickening of the affected scalp.

*c. Epidemiology.* This disorder, developing only in post-pubertal males, affects predominantly black males. Reports in the literature have also noted development in Orientals and in whites of Mediterranean descent. It is most frequent before the age of 25 and occurs from wearing the closely shaven "high and tight" hair style.

*d. Military considerations.*

(1) The standards of appearance specify a neatly trimmed hairstyle. Tapering of the hair of the posterior scalp and neck does not interfere with the wearing of military headgear or the protective mask. There is no requirement for the "high and tight" hairstyle.

(2) While the medical management of acne keloidalis nuchae often necessitates wearing a longer hairstyle, hair can still be maintained at an acceptable length and not detract from proper military appearance.

### 12. Pathogenesis

*a. Anatomical factors.* Acne keloidalis nuchae occurs in men with tightly curled hair similar to that of PFB. Studies have noted the presence of sharply pointed, short, curled hairs, with surrounding foreign body granulomatous reactions within the scars. The short hairs penetrate the skin and create a foreign body reaction. This leads to the development of papules/pustules, and, subsequently, keloid-like hypertrophic scarring occurs. There have been no specific bacterial organisms implicated in this process; however, secondary bacterial infection may occur, often complicating the management and contributing to the progression of the disorder.

*b. Mechanical factors.* The hairs, cut too short to create the "high and tight" look, reenter the skin, or may rupture the follicular wall before exiting the folli-

cular orifice. A granulomatous infiltrate develops, and secondary cicatrization begins with the development of hypertrophic scarring. In those individuals genetically predisposed, this scarring may eventually become a true keloid formation.

*c. Infectious factors.* There is no specific bacterial agent currently implicated in the development of the disorder. Secondary infection may occur, and, occasionally, the disorder may develop after a superficial bacterial infection from poorly sterilized barber instruments.

### 13. Clinical approach to the patient

This condition, while uncommon, has seen an increase in recent years due to a return to the "high and tight" style of military haircut. The papules, once developed, are chronic and difficult to treat. They can also be irritated by the top of the shirt or jacket collar, which often adds to the progression of the disorder. Treatment is directed towards eliminating the contributing factors, halting the development of any further scarring, and decreasing the existing scar formation.

### 14. Management techniques

*a. Close shaving.* The soldier should be advised to cease wearing the closely trimmed "high and tight" hair style and allow his hair to grow to a longer, yet still militarily acceptable, length.

*b. Antibiotics.* The use of antibiotics should be reserved for the treatment of a known bacterial infection. One of the more skin specific classes of antibiotics is tetracycline. It imparts both antibiotic and anti-inflammatory properties. Before beginning any antibiotic regimen, culture and sensitivity testing should be performed on samples taken from the affected scalp.

*c. Steroids.* Topical steroids are of great value in the treatment of acne keloidalis nuchae. A good mid-potent topical steroid should be applied twice daily to the affected areas. Intralesional steroid injections, given monthly or every 6 weeks (depending on the severity of the scarring) are helpful in decreasing scar formation. Triamcinolone acetonide is given as the recommended course, beginning at concentrations of 20 milligrams/milliliter (mg/ml) in very severe cases, or 10 mg/ml in less severe cases, and decreasing gradually to 3 mg/ml



strength as the scars subside. On the average, intralesional injections of the 10 mg/ml strength are the most commonly used for maintenance therapy.

*d. Wide excision.* For cases that are either severe or unremitting, wide excision of the scars, with healing by secondary intention, is recommended. Recent studies have shown excellent results. While some scar formation is unavoidable, the resulting scar is much more cosmetically acceptable than those of the preoperative condition. This technique should be reserved for dermatologists and surgeons and should not be attempted at the general medical level. It should not be performed in individuals who are prone to the development of keloids. The soldier will be placed on convalescent leave during the post-operative phase of this treatment.

*e. Profiles.* If needed, profiles should be given to prevent irritation by the wear of protective headgear or other protective garments (for example, flak-jackets with high collars as worn by combat vehicle crewmen). These profiles are used for the duration of the treatment period. To date, no permanent profiling has been necessary for this condition. Commanders are reminded that the soldier may be instructed to wear protective

headgear and other protective clothing, as the mission requires. This authority should not be used to require these items during maneuvers or tactical simulations.

## 15. Summary

Currently, the mainstay of treatment for acne keloidalis nuchae consists of changing the soldier's hairstyle from one that is too closely shaven to one that is longer but still militarily acceptable. Topical and intralesional steroids are the most commonly used techniques for treatment and currently have a good success rate. However, this disorder is chronic and may be recurrent. For those disorders that are severe or resistant to other forms of treatment, wide excision with healing by secondary intention is recommended. The patient should be initially evaluated by a dermatologist, and a strategy for therapy can be devised. After evaluation by a dermatologist, the treatment regimen can be administered by physicians and physician assistants who are familiar with the disorder. It should be understood that this condition does not remove the soldier from a combat-ready status.

## Appendix A

### References

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The following listed publications can normally be obtained at, or through, AMEDD library facilities or through normal distribution channels.

#### A-1. Publications.

AR 40-501

Standards of Medical Fitness.

#### A-2. Forms.

DA Form 3349

Physical Profile

#### A-3. Selected Bibliography

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## GLOSSARY

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**AMEDD**

Army Medical Department

**BPO**

benzoyl peroxide 5 percent gel

**mg**

milligram(s)

**ml**

milliliter(s)

**mm**

millimeter(s)

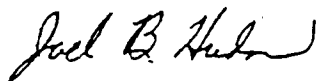
**PFB**

pseudofolliculitis of the beard

By Order of the Secretary of the Army:

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