or furunculosis. I believe that the favorable results classified as due to internal medicine could not be ascribed to any direct action of the medicine itself, but rather to the improvement of the physical condition of anemic patients by the use of such medicines as cod liver oil, iron, arsenic, strychnin, bitter tonics, etc., by stimulating the excretory organs, by regulating the habits, and by improving the personal hygiene.

CONCLUSIONS

Our investigation would seem to demonstrate, first, the important part played by personal hygiene in the cause, prevention, and treatment of acne vulgaris and furunculosis; second, the superiority of well-known therapeutic measures over vaccine therapy in the conditions studied; and third, the value of following up the cases to ascertain the number of permanent improvements, since experience has shown that the results attained during the time of treatment are no criteria of the changes to be seen in the eruption at a later date.

As T. J. Horder⁶ has well said: "The failures of vaccine therapy are probably more numerous than its successes."

317 College Avenue.

A CASE OF GRANULOMA PYOGENICUM AFFECTING THE EYELID*

CASSIUS D. WESCOTT, M.D.

CHICAGO

May 16, 1914, Harold B., aged 9 years, was referred to me by Dr. George W. Webster of Chicago, because of a tumor of the eyelid. The history, obtained from Dr. Webster and the boy's guardian, was of a small tumor, apparently a sebaceous cyst, which was first noticed eight or ten weeks before, just above the cilia of the upper lid of the left eye. About two weeks before his visit to me the appearance had suddenly changed to that of a blood blister, which in a few days was so prominent that a silk thread was tied around it with the idea of strangulating and removing it. Instead of drying and dropping off, as had been expected, the tumor evidently became infected, grew larger and bled easily when it was touched.

On examination, I found a teat-shaped mass of dark red color projecting from above the lid edge, apparently coming through the skin rather than growing from it, being surrounded by normal integument, as with a collar. The boy's guardian was extremely anxious about his condition, as his father had recently died of carcinoma of the face. I had never seen such a tumor, and suggested that Dr. W. A. Pusey, professor of dermatology in the University of Illinois, College of Medicine, be consulted. He at once made the diagnosis of granuloma pyogenicum, and a slide which I had made from a bit of the tip of the tumor confirmed the diagnosis. The following is from Dr. Pusey's report to me after seeing the patient:

"Granuloma pyogenicum, of which this case is a type, is a condition which pathologically is very simple, but clinically is extremely confusing. The lesions first show as a minute, bright red to dark red tumor. This grows rapidly until it reaches the size of a half pea or hazelnut, or larger, and then remains stationary or, it may be, shrinks slightly and becomes denser. A developed lesion may be a prominent sessile tumor, popping up through a thick horny collar, or a flattened dome-shaped red mass of the diameter of a pea or hazelnut kernel with a similar collar. The early lesions are usually denuded of horny epidermis, bright red, soft, and

bleed easily; the older lesions have a thin translucent layer of horny epidermis over them, and so are less intensely colored, are fairly firm to the feel and do not bleed unless wounded. In my experience, they are usually not painful or tender. They occur on the face and hands by preference. As they persist for weeks or months and stubbornly return if not completely destroyed, they are very apt to be a source of perplexity, if not anxiety.

"The two conditions which they simulate are malignant tumors and chancres. On the face they arouse fears of malignancy, and I recall one flattened round lesion on the finger of a dentist which I was able to differentiate from a chancre only by the most careful study. As the lesions are not infrequent, their recognition is a matter of considerable practical importance. The lesions are in the beginning masses of highly vascular granulations produced by infection with staphylococci of slight virulence. Later they become a mass of well organized connective tissue riddled with blood vessels. The most striking and characteristic feature is the great number of new blood vessels, which may be so numerous as to suggest an angioma.

"Simple as the lesions are, they have been the source of no end of clinical, pathologic and bacteriologic confusion. The cases were first described in 1897 by Poncet and Dor as botryomycosis hominis. By 1902 Bodin and others had demonstrated that the organisms producing the lesions were not botryomyces but staphylococci. And in 1904 Hartzell clearly established the true character of the lesions and suggested the name granuloma pyogenicum."

May 28, under ether anesthesia, I removed the tumor by a clean incision with curved scissors, down to the tarsus, curetted the base and skin edges and cauterized the wound with solid silver nitrate. The eye was dressed with White's ointment, and the wound healed without infection and with a very small scar.

The patient reported Sept. 13, 1914, and there had been no recurrence, and the cilia were only slightly disturbed. I have recently seen him again, and there is still no recurrence.

In 1906, Dr. Pusey¹ published an excellent paper on vegetating dermatoses in which reference is made to granuloma pyogenicum. In 1910, Wile² published an elaborate article on granuloma pyogenicum with complete bibliography.

22 East Washington Street.

ABSTRACT OF DISCUSSION

DR. LEE M. FRANCIS, Buffalo: As Dr. Wescott suggests, granuloma pyogenicum had had a clinical identity only since 1897. As far as I am able to gather, this is the first case involving the eyelids to be reported, although it is not clear why the growth should not have been more frequently observed in this area. The lids, frequently exposed to abrasion and infection from meddling fingers, with a very thin and loosely attached integument, offer a favorable site of low resisting power to bacterial invasion. As stated, the causal factor is probably a staphylococcus of low virulence implanted in an unfavorable soil. The lesions develop most frequently on the fingers, feet and face, although no part of the body is immune. Sutton (*THE JOURNAL*, May 20, 1916, p. 1613) has reported three cases occurring on the lips. Wile (*Jour. Cutan. Dis.*, December, 1910) has pointed out that granuloma pyogenicum presents a uniform histologic appearance, essentially that of circumscribed granulation tissue, rich in thin walled blood vessels with mononuclear and polynuclear infiltration. According to Wile, the condition also presents certain rather constant clinical aspects which serve to identify it, namely, a pedicle, tendency to hemorrhage when touched, rapid growth, and proneness to recurrence, if not thoroughly ablated and its base carefully cauterized. To this should be added the previous history of injury. It must not be forgotten that the latter may be very minute, as, for

6. Horder, T. J.: *Lancet*, London, Jan. 31, 1914, p. 310.

* Read before the Section on Ophthalmology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Pusey, W. A.: *Jour. Cutan. Dis.*, December, 1906.

2. Wile: *Jour. Cutan. Dis.*, December, 1910.

example, an insect bite. Stellwagon has commented on the resemblance between granuloma pyogenicum and the raspberry or strawberry-like growth sometimes following vaccination (usually unsuccessful). As Dr. Wescott has said, granuloma pyogenicum might be confused with the initial lesion of syphilis and malignant growth. The lack of induration and of regional lymph involvement differentiates it from the former, while the patient's age, slower growth, and absence of a precancerous stage, such as hyperkeratotic patches, would differentiate it from the latter. The final analysis must be left to the pathologist and bacteriologist.

DR. UDO J. WILE, Ann Arbor, Mich.: The cases I described were three. It seemed a subject of more than unusual interest. The diagnosis of sarcoma has so frequently been made in cases of pyogenic granuloma that many persons have suffered the loss of a finger, hand or arm when sarcoma was suspected. Before I began the histologic study of this type of tumor it was known that the staphylococcus was the basis of it, but we did not know why it should produce a fungating type of lesion with a granulomatous base. If the explanation I have offered is correct, it would seem that the injury—the site of the injury—is a most important factor in the development of the tumor. The staphylococci are implanted in the intima of the blood vessels. We have an actual blood-vascular tumor. This explains why simple ablation does not result in a cure. If ablated level with the surface or even below it, the tumors usually return with an increase in their growth. If, however, the offending blood vessel focus of infection is cauterized, they are permanently cured.

DR. JOHN E. WEEKS, New York: In this connection I wish to inquire whether the so-called granuloma of the cornea or of the sclerocorneal margin is not akin to this granuloma that has been described as affecting the skin of the lids and the skin of various parts of the body. All who have dealt with granuloma of the cornea know that there is a marked tendency to recur. Some years ago I had opportunity to examine microscopically and bacteriologically two cases of sclerocorneal tumor. In one case operation had been performed twice, recurrence had taken place, and the eye was enucleated on the third recurrence. On examining that eye I found masses of staphylococci in the blood vessels and in the tissues at the base of the tumor. The tumor did not transcend into the true tissues of the cornea, and it occurred to me that the exciting cause of the tumor was the micro-organism. So in the next case that presented itself to me I excised deeply and cauterized the surface of the granuloma and succeeded in preventing a subsequent recurrence. On examining that tumor I found the same condition. It was a puzzle to me. The description of this growth beginning in the lid or in the skin makes it apparent to me that in all probability the so-called granuloma occurring on the cornea and limbus is of the same nature.

DR. HAROLD GIFFORD, Omaha: I saw one case of this affection a number of years ago which took a somewhat unusual course, in that the lid perforated entirely. This fungoid mass perforated first the outside and then the inner side and left quite a large hole through the center of the left upper lid. This was in a young woman who had a peculiar skin eruption which suggested secondary syphilis, and she came from a region just having smallpox. We never could tell just what she had. Whether it had any connection with the main cause I do not know. At that time we did not know about granuloma pyogenicum. I indexed this as a case of botryomycosis, which was the name under which it went at first. The patient made a perfect recovery. We simply cut out the hole and sewed up the lid. Since reading of Dr. Wescott's case it has occurred to me that any one reading this description might take cases of sporotrichosis for pyogenic granuloma, because in sporotrichosis there is sometimes a fungating mass covered with a coating of thin skin, and the description sounds quite similar. The course would probably be different, and so far as I know the staphylococcus has not been noticed; but I think it might be well to keep this possible mistake in mind.

DR. EDWARD JACKSON, Denver: I should like to mention a case which has taken a new significance for me from Dr.

Weeks' remarks—a case I saw two months ago, in which the structure is clearly that of granuloma, but which was not stained and examined for the presence of micro-organisms. It was at the margin of the cornea. Two things which I have never seen before struck me in the clinical appearance of this little swelling. One was the markedly purplish red surface, and the other an edge that reminded me of the edge of an epithelioma but was perfectly soft, consisting of almost normal conjunctiva, an appearance recalled by the collar around the neck of the granuloma as spoken of. The structure, as far as histologic examination could determine, was clearly similar to the class of tumors under discussion. The history of this, of about six or eight weeks' standing, would place it as a comparatively early tumor of the sort.

DR. C. D. WESCOTT, Chicago: I have seen only one or two cases of sporotrichosis, and these I could easily differentiate after seeing this case and reading the description of the other cases. The rising of the tumor through a collar of skin is characteristic, and is described by every one who has seen the tumor.

Therapeutics

HEMORRHAGIC CONDITIONS

(Concluded from page 1925)

TRANSFUSION OF BLOOD—(CONCLUDED)

INDICATIONS

As technic improves and experience increases in transfusions, more and more indications for its use are being found. It is no longer used only as a last resort for life-saving purposes. It is finding its field of usefulness extended to diseases in which an influx of some new blood might hasten the progress toward improvement, or diseases in which it will tide the patient over a temporary relapse. In reviewing the results of 212 blood transfusions in 189 cases, Ottenberg and Libman¹⁰ mention a large number of varied conditions in which transfusion was tried. They also discuss the results obtained in each condition. Their classification is as follows:

- I. Transfusions for simple hemorrhage.
 1. Gastric and duodenal ulcer.
 2. Dysentery.
 3. Typhoid hemorrhage.
 4. Ectopic pregnancy.
- II. Transfusions in connection with surgical operations.
 1. Preliminary to operation.
 2. For postoperative hemorrhage.
 3. For shock.
- III. Transfusions for the cure of hemorrhagic conditions.
 1. Purpura hemorrhagica.
 2. Hemophilia.
 3. Hemorrhages secondary to:
 - (a) Blood diseases.
 - (b) Severe infections.
 - (c) Jaundice (cholemia).
- IV. Transfusions for blood diseases.
 1. Pernicious anemia.
 2. Leukemia.
- V. Transfusions for infections.
 1. Infections with pyogenic organisms.
 2. Subacute streptococcus endocarditis.
- VI. Transfusions for intoxications.
 1. Acute poisoning.
 2. Diabetic coma.
- VII. Transfusions for debilitated conditions.
 1. Cancer.
 2. Malnutrition.
 3. Simple anemia.

10. Ottenberg and Libman: Am. Jour. Med. Sc., 1915, cl, 36.