BOILS IN ALLERGIC PATIENTS

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This study of boils was carried out in an industrial general practice. The writer who is specially interested in allergy has noticed that most of the patients suffering from boils were also suffering from allergic diseases and he decided to investigate them closely.

Selection of Patients

Patients suffering from boils and carbuncles were included in this investigation. Patients suffering from styes, otitis externa, whitlows, infected wounds or abscesses were excluded. The practice is a group practice with 5,600 National Health Service patients. The incidence of allergic diseases in the practice has been recorded.[1] There are at present 250 patients suffering from various allergic diseases. Altogether 60 patients were investigated from May 1956 until August 1957.

Method

To facilitate the investigation a standard history chart was completed for each patient with a special reference to personal and family history of allergy. Each patient had a full physical examination. Swabs were taken from the boils and from the nostrils for bacteriological examination. Blood samples were drawn by vein puncture for full blood count and haemoglobin estimation. Urine was tested for sugar and albumin.

Skin tests to staphylococcus aureus were carried out before treatment. A small amount (0.02 ml.) of the solution (Bencard Ltd), was injected intradermally on inner aspect of the forearm. A similar amount of an intradermal control solution was injected a few inches below the first one. The weal and erythema resulting from the injections were drawn on a transparent paper and reproduced on the patient's history chart. The skin reactions were measured with a transparent skin testing reaction gauge (Bencard Ltd).

Findings

Sex distribution. There were 42 male patients (70 per cent) and 18 female patients (30 per cent).

Occupation. It was observed that no social group of patients was predisposed to boils: general labourers, housewives, shopkeepers, clerks and workers from other occupations were affected.

TABLE I AGE DISTRIBUTION

Age in years	*Number of patients*	*Percentage of patients*
1—10	5	8
1—15	3	5
15—20	7	11.6
20—30	16	26.6
over 30	29	48

Seasonal incidence. The peak incidence of boils was during the months of August, September and October. This observation confirms the findings of Whitwell and Sutherland.[2]

History of previous skin infections. There were 48 patients (80 per cent) who had had boils before.

History of trauma. Ten patients blamed insect bites for their boils and twelve patients admitted having itchy skin and scratching it.

History of contact. Five patients observed that their friends at work had boils and there were six patients whose family members were suffering from boils.

Bowel habits. Three patients complained of constipation and one had loose stools.

Psychological factors. Four patients were suffering from anxiety states and one from menopausal symptoms.

Incidence of allergic diseases. There were 53 patients (88.3 per cent) who gave positive personal history of allergic diseases. Among them there were 29 patients (48 per cent) with one allergic complaint; 19 patients (31.6 per cent) with two allergic complaints, and five patients (8.3 per cent) with three different allergic complaints.

There were seven patients without personal history of allergy. Among them there were two non-allergic diabetic patients and two patients with a positive family history of allergy. There were three patients without personal or family history of allergic diseases.

TABLE II NATURE OF ALLERGIC DISEASES

Allergic disease	*Number of patients*
Nasal allergy (allergic rhinitis/hay fever) ..	22
Urticaria/angioneurotic oedema	9
Atopic eczema	9
Bronchial asthma	8
Contact dermatitis	5

Some of the patients were suffering from more than one allergic disease. The complaint which was causing most of the symptoms at the time of examination was taken into account.

Family history of allergic diseases. There were 23 patients who gave positive family history of bronchial asthma; 12 patients had relatives suffering from allergic dermatoses, and 7 patients gave family history of nasal allergy.

Physical Examination

Location of lesion. Fifty-one patients had a single boil and nine patients suffered from multiple boils. The unclothed areas of the body were more often affected than the covered ones.

TABLE III LOCATION OF THE SINGLE BOILS

Site	*Number of patients*
Back of the neck	11
The forearm	7
Face	5
Forehead	4
Ankle region	4
Dorsum of the hands	3
Dorsum of the fingers	3
The temple	2
Wrist region	2
Shoulder blades region	2
Axilla	1
Elbow region	1
Dorsum of foot	1
Thigh	1
Groin	1
Abdominal wall	1
Sacral region	1
Corner of the mouth	1

TABLE IV LOCATION OF MULTIPLE BOILS

Site	*Number of patients*
Neck and both forearms	3
Neck and face	2
Neck, wrist and legs	1
Forehead and knee	1
Both legs	1
Both forearms	1

Besides allergic diseases various other diseases were found.

TABLE V DISEASES OTHER THAN ALLERGIC

Disease	*Number of patients*
Diabetes mellitus	3
A febrile cold	3
Duodenal ulcer	2
Osteo-arthritis of spine	2
Recent miscarriage	1
Chronic otorrhoea	1
Herpes zoster	1
Recent coronary thrombosis	1
Myxoedema	1
Menière's disease	1
Hyperhidrosis	1

Focus of infection. Careful search was made for any focus of staphylococcal infection. There were 24 patients (40 per cent) who had a septic crack or small boils in the nasal vestibule. Two patients had infected angular stomatitis, two had signs of recently healed boils, three patients suffered from follicular acne and one had sycosis barbae.

Examination of the pus from the lesion. Staphylococcus aureus was isolated from boils in 58 patients (96.6 per cent) and staphylococcus albus in the remaining two cases.

Organisms recovered from the nose. Majority of patients (82 per cent) suffering from boils were nasal carriers of staphylococcus aureus.

TABLE VI ORGANISMS RECOVERED FROM THE NOSE

Organism	*Number of patients*
Staphylococcus aureus	47
Staphylococcus albus	4
Diphtheroids	4
Streptococci	1
Bacillus proteus	1
No growth	3

Examination of blood. No gross anaemia was discovered among the patients suffering from boils. Thirty-five patients had a moderate leucocytosis.

Skin tests to staphylococcus aureus products. The diameter of the weal and erythema resulting from the injection was recorded in millimetres.

TABLE VII SKIN REACTIONS TO STAPHYLOCOCCUS AUREUS PRODUCTS

Diameter of reaction in millimetres	*Number of patients*	*Percentage of patients*
8	1	
10	1	
12	6	10
14	21	35
16	13	20.6
20	16	26.6
25	1	
30	1	

Most of the patients suffering from boils gave strong cutaneous reactions to staphylococcus aureus products.

Discussion

The following findings emerged from this work:—

(1) that boils as seen in general practice occur in allergic patients;

(2) that the majority of these patients are nasal carriers of staphylococcus aureus;

TABLE VIII SKIN REACTIONS TO CONTROL SOLUTION

Diameter of reaction in millimetres	*Number of patients*	*Percentage of patients*
1	1	
2	5	8.3
3	4	6.6
4	2	
5	5	8.3
6	7	11.6
7	5	8.3
8	7	11.6
9	8	13.3
10	5	8.3
12	6	10
14	4	16
16	1	

(3) that these patients give positive skin reactions to staphylococcus aureus products.

Patients suffering from nasal allergy are predisposed to be nasal carriers of staphylococcus aureus. There were 22 patients (36.6 per cent) in this series complaining of allergic rhinitis or hay fever at the time of examination. Pathogenic bacteria including staphylococcus aureus are inhaled or transferred on the fingers to the nasal vestibule. They penetrate the congested mucous membranes easily and bring on infections of paranasal sinuses or boils of the nasal vestibule. The skin around the nostrils is often cracked and infected. There were 24 patients (40 per cent) in this group who had a visible focus of staphylococcal infection in the nose.

Allergic dermatoses are associated with itching or burning sensation at the site of the lesion. There were 23 patients (38 per cent) in this study complaining of allergic skin diseases. Scratching of the skin and breaking of the epithelial layer would facilitate the infection. The fingers of an allergic person contaminated with staphylococcus aureus from the nose implant the organism by

scratching or touching in a vulnerable area of the skin. The habitual scratching of the neck would explain the high incidence of boils in this place. The back of the neck is also a common place of acne, urticaria, angioneurotic oedema, seborrhoeic dermatitis, contact dermatitis to collar studs, hair dressings, scarves, fur collars and lichen simplex chronicus of Vidal. There were 17 patients (28 per cent) in this series suffering from boils at the back of the neck.

The ten patients (16 per cent) who claimed that their boils had started with insect bites all suffered from urticaria and angioneurotic oedema resulting from insect bites.

Staphylococcus aureus possesses not only toxic, but also certain allergenic and anaphylactogenic properties. Immediate and delayed skin reactions to various fractions of staphylococcus aureus were reported.[3] Anaphylactogenic and sensitizing properties of this organism were described.[4, 5] It was shown also that mice sensitized with a combined pertussis serum mixture were more vulnerable to staphylococcal infections than normal mice.[6]

The exact mechanism by which an allergic person is susceptible to boils is not known, but the allergic state of the patient and the allergenic properties of staphylococcus aureus play some part in it.

Summary and Conclusions

Observation was kept on 60 patients suffering from boils in an industrial general practice over a period of 16 months. Among them there were 53 cases (88 per cent) suffering from various allergic diseases. Forty-two (70 per cent) gave a positive family history of allergic diseases.

Staphylococcus aureus was isolated from the lesion in 58 patients (96.6 per cent) and staphylococcus albus in the remaining two cases.

Forty-seven patients (82 per cent) were nasal carriers of staphylococcus aureus, and four (6.6 per cent) were carriers of staphylococcus albus. Patients suffering from boils gave strong cutaneous reactions to staphylococcus aureus products.

There were three known diabetic patients suffering from boils. One of them suffered also from allergic rhinitis. No new cases of diabetes mellitus were discovered by routine urine tests among the patients suffering from boils.

There was no evidence of undernourishment, overcrowding or lack of hygiene among the patients suffering from boils, and no particular social group was affected by boils.

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REFERENCES

Hamilton, N. J. T. and Bendkowski, B., *Brit. med. J.*, 1954, **1**, 1069.
Whitwell, G. P. B. and Sutherland, I., *Brit. J. Derm.*, 1950, **62**, 109.
Kahn, M. C., Baldwin, H. S., Zeitlin, B. R. and Smart, M., *J. Allergy*, 1591, **22**, 237.
Dworetzky, M., Baldwin, H. S., and Smart, M., *J. Allergy*, 1956, **27**, 39.
Cohen, S. G., Dzury, D. S., Michelini, F. J., *J. Allergy*, 1957, **28**, 531.
Prigal, S. J., *J. Allergy*, 1957, **28**, 301.

FROM THE RESEARCH COMMITTEE OF COUNCIL

DIABETES DETECTION DRIVES

In February 1957, the research committee of council appointed a working party to consider the conduct of a College diabetes survey.

After preliminary trials with both " Clinistix " and " Tes-tape ", and after consultations with Mr D. H. Vobes of Ames Co., a pilot survey was carried out in the practices of six members of the research register of the College.

This paper describes the method used to detect patients with glycosuria in that pilot survey and which was shown to be suitable for a large scale survey conducted by general practitioners in their practices.

The purpose of diabetes detection drives in the past has been to establish, with varying degrees of accuracy, the true incidence of diabetes (and glycosuria) both known and previously undiscovered. To achieve this it is necessary that the testing of urines for sugar is not carried out indiscriminately or confined to any special medical, social, occupational, or age group. The urine specimens tested must be obtained from a representative sample of the general population. This can only be carried out satisfactorily, for a large population, in general practice. The relationship of non-diabetic glycosuria to true diabetes can only be established by a follow-up of patients with the former condition, and members of the College have a unique opportunity to study both problems.

The pilot survey population was composed of the members of the families of the first three different names in each letter of the