BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An Open Forum for brief discussions of the workaday problems of the bedside doctor. Suggestions of subjects for discussions invited.

ERYSIPELAS

I. SYMPTOMS

FRED H. KRUSE, M. D. (384 Post Street, San Francisco).—Like all other infections, the primary effects of erysipelas include the local symptoms referable to the focal invasion and the general or constitutional reaction. The secondary effects, and therefore the complicating symptomatology, result from the spread of the streptococcal infection into other organs such as the joints, kidneys, or central nervous system.

Erysipelas is a violent inflammation of the superficial lymph channels, and occurs most frequently about the face and head, probably because of the excessive number of superficial lymphatic vessels in these regions. This is characterized by a disseminated inflammation of the skin. Tension of the cellular tissues becomes very marked, and as the inflammation advances, a sharp line of demarcation is usually noted at its edge, clearly distinguishing the swollen, raised and reddish area involved from that of the adjacent, normal skin. Blebs may form on the surface from the intense irritation of the papillary layer of the skin. When the deeper lymphatics are affected, a great deal of effusion takes place in the cellular tissue, and cellulitis results.

There may be a wound or break in the skin from which the redness starts, or there may be no cutaneous evidence of the seat of the infection. A fissure in the skin at the opening of the nares, especially associated with a recent cold, is a most frequent start for erysipelas of the face. The inflammation may extend to the fauces or tongue, or proceed painlessly up the eustachian tube, involve one or both eyes, and even cause blindness. The delicate skin of old people, slightly traumatized, eczematous lesions, trivial scratches or abrasions anywhere, may be the site of ingress of the offending streptococcus. There may be red streaks showing lymphatic channels extending from a wound to the point of acute inflammation, or, having traveled up the lymphatics, the organism may start the erysipelatous process at a distance from the seat of entrance. The local area involved is tense, hot and painful, and very tender to touch. With the onset of the disease, fever develops, and may rise to 104 degrees Fahrenheit or even higher. This is frequently preceded by a chill. Intense malaise, accompanied by muscular pains and prostration, with headache, rapid pulse, sweating, and dehydration may follow. On the other hand, fever may not be excessive, depending upon the dissemination of the infection. It may be a continuous, remittent or intermittent type. Occasionally no fever occurs, usually when the immunizing functions are inadequate, and some of these cases may be very grave.

A high white-blood count, with increased polymorphonucleated cells, is generally found, the leukocytosis varying with the degree of fever. In about one-third of cases of severe erysipelas the blood culture is positive for streptococcus, but this does not necessarily imply an unfavorable prognosis.

The usual gastro-intestinal symtoms of an intense infection develop, with varying degrees of nausea, vomiting, thirst, anorexia, and a badly coated tongue.

The urine is concentrated, highly colored, and albuminuria may be considerable. Bile pigment, red blood cells, and casts may be found.

The spleen may be palpable, and lumbar pain is frequent.

Sore throat, tonsillitis, tracheitis, and even pneumonia may ensue.

There are many very mild cases of erysipelas lasting only a day or two, but usually the disease delineates its course in two or three weeks. The duration is uncertain, however, and often it subsides only to reappear again, traveling over the whole body and even attacking the same locality again.

Like chronic recurring herpes simplex, erysipelas may habitually reattack the same individual many times, most frequently about the face, from a chronic nasal focus.

The secondary effects or complications include not only those I have named about the head, throat, and eyes, but the streptococcus may localize in the lungs, producing pneumonia and empyema; the kidneys in 38 to 40 per cent of cases causing a nephritis; the heart, resulting in myocarditis and endocarditis, and in the joints as a synovitis or suppurative arthritis. Meningitis and mastoiditis are not uncommon. In fact, no system or organ of the body may escape the ravages of this form of streptococcus infection.

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II. ETIOLOGY AND DIAGNOSIS

R. MANNING CLARKE, M. D. (1219 Hollingsworth Building, Los Angeles).—Erysipelas has been known from the remotest antiquity. It is clear from the writings of Hippocrates that it was known long before his time. Hippocrates, Galen, and Celsius, all three wrote extensively regarding it. They all distinguished the traumatic from the idiopathic, and gave very good descriptions of the condition clinically.

The ideas of these ancient writers on the subject of its etiology are most interesting. They recog-

nized its seasonal occurrence in spring and fall. From this they drew the conclusion that "there were certain poisons" in the air of certain weather conditions that caused the disease. It was clearly recognized that those living in bad, uncleanly conditions were especially prone to suffer from the malady. Whether or not it was because of these two conditions, *e. g.*, the weather and unsanitary surroundings, cannot be said; but one gets the inference that they felt there was some earthy influence with which they had to deal. All writings of this time are full of talk about telluric influences. Tollus, the Roman god of the earth, was accredited by many lesser writers with the power to influence this disease.

Galen lay great stress upon certain biliary changes which influenced the blood and was thereby a specific cause of the disease. "Poisons of the bile," circulating in the blood, were put forward by many writers, following him, as the most probable cause of the disease. This idea really held forth until the end of the eighteenth century. At this time in England (1777), John Hunter and Gregory suggested that the nature of the disease might be parasitical. Velpeau and Trousseau in France began at once to support this idea, with the result that the old explanations began to weaken. Wernher, Billroth, Volkmann, and many others, soon endorsed the new teachings.

Nepveau was the first to discover organisms in the lesion of erysipelas in 1870. Lukomsky (1874) then showed that the organisms were in the lymph spaces, and not in the blood vessels. Nothing of any account happened after this until Fehleisen (1882) discovered a coccus that occurred in long chains in the lymph spaces. He worked constantly with this organism and shortly thereafter he was able to grow it in pure culture. He named it *Streptococcus erysipelatus*. With this organism, Fehleisen was able to produce the disease in both rabbits and humans under classical conditions, and felt the ultimate answer had been provided.

Von Jochmann, Widal, and others, soon objected to the finality of the conclusions regarding this, and suggested that erysipelas could be produced by any streptococcus taken from a case of peritonitis, for instance. . . . It is now generally accepted that erysipelas is caused by a streptococcus belonging to the beta group; that is, streptococcus hemolyticus. However, Gay, in his celebrated recent text, says: "Howell, Tunnicliff, and Birkhaug, all came to the conclusion that erysipelas cocci belong to the single antigenic group in contrast to hemolytic varieties from all other sources. Birkhaug has extended his conception by means of interactions between the toxin of erysipelas strain and a corresponding antitoxin. Schwartzman offered another criterion of differentiation in his assertion that erysipelas strains are specifically susceptible to a particular streptococcus bacteriophage. Subsequent work by Singer and Caplan, by Okell and Parish, and by Williams, based also on toxin antitoxin experiments, *led them to the directly opposite conclusion, namely, that the streptococcus of erysipelas does not possess strict biologic specificity, with which we should agree until further information is available.*"

Secondary Etiology.—Temperature and climate have quite a direct influence. The disease occurs almost entirely in the temperate zone. Its seasonal variation has always been noted. Cold months of spring and fall are apt to cause an increase. April, I believe, heads the list of all months.

Uncleanly habits, failure to observe the fundamentals of personal hygiene are important. Unsanitary conditions, especially in plumbing and housing, poor ventilation, and overcrowding, can usually be depended upon to bring about epidemics or outbreaks. This is true in families, but still more so in barracks or institutions.

Lowered individual resistance is a direct invitation to the disease. It may be either local or general. Trauma of any kind, whether gross or microscopical, is an important factor. Alcoholism, malnutrition, excessive childbirth, the parturition period, nephritis, carcinoma, and other factors too numerous to mention, are well understood in their influence over erysipelas.

The diagnosis of erysipelas after the presenting skin lesion is relatively easy. It is in those patients in whom the prodromal symptoms are of long duration, or where the skin manifestation occurs in an atypical form or site that diagnosis becomes difficult. For the most part, there are only a few conditions which offer differential diagnostic possibilities.

It is essential to have the chief diagnostic features of erysipelas in mind before attempting a differential diagnosis. We must remember that erysipelas may be any gradation from a relatively benign ambulatory condition to an extremely toxic one, resulting in a fatal termination, depending upon the virulence of the organism, the resistance of the host, and the part affected. It is unusual that a truly acute erysipelas does not have the usual prodromal symptoms of malaise, nausea, chills (with fever ranging from 102 to 107), depression and severe headache. This is followed in twenty-four to seventy-two hours by the rather small, sharply circumscribed, edematous, shiny, bright red, dermal manifestation. This spreads rapidly, even involving the mucous membrane, usually stopping at the hair margin unless of virulent character. When the hair or beard is involved, there is usually a resultant temporary alopecia. The area seldom becomes larger than palm-sized, but may involve an entire extremity or even, in some fatal cases, the entire integment. When the eruption develops rapidly, and severe edema is present, vesicles or bullae appear superimposed upon the above lesions.

It is quite common to have erysipelas follow insignificant operations, such as pricking the ear for blood, incising a pustule, or even vaccination, as well as more serious operations such as sinuses, episiotomy, appendix, and mastoid.

The acute dermatitis venenata with severe edema and superimposed bullae will oftentimes

assume a rather sharp demarcation, particularly in cases of occupational etiology such as plant or chemical allergies. In these cases the lack of constitutional symptoms and the suggestive history, plus the positive contact or patch test, are sufficient for diagnosis.

The chronic circumscribed eczemas or lichen chronicus simplex cases are of relatively long duration and, although sharply marginated and deeply infiltrated, are usually lichenified and covered with an adherent whitish scale in contradistinction to the bright red, shiny, edematous and oftentimes bullous erysipelas lesion. Acute infectious exanthema exhibit the coalesced erythematous papulo-vesicular puncta, which tend to be more generalized and results from toxic absorption rather than infection with the streptococcus.

In streptococcal septicemia, many times areas of typical erysipelas will appear during the course of the disease which often results fatally.

Occasionally lupus erythematosus assumes an acute form which frequently affects the cheeks, eyelids, nose, ears, and mouth, causing a rather sharply demarcated erythematous, edematous, occasionally bullous eruption quite consistent with an acute erysipelas. It usually affects the hands or some other part of the body, and does not have the severe constitutional symptoms.

The simple erythema multiforme, may occasionally be confused with erysipelas, but should not be for long. The multiplicity of lesions and their tendency to remain *in situ* without extension, as well as much less severe prodromal and systemic symptoms, rule this condition out.

Lastly, one must consider the entity described by Rosenbach as erysipeloid, in which he refers to those cases caused by trauma, and particularly fish or crab trauma. The eruption consists of a migratory, sharply marginated violaceous eruption which usually has no systemic symptoms. It is thought that it is caused by a fungus or "ringworm" infection. Streptococci are rarely found.

Erysipelas is a condition which requires considerable ingenuity at times, both in diagnosis and in treatment.

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III. TREATMENT

EDWARD B. SHAW, M. D. (384 Post Street, San Francisco). — The course of erysipelas is extremely variable without respect to the treatment employed. Rapid regression often occurs spontaneously, sometimes encouraging optimism concerning whatever therapy may have been employed; but no less frequently is this optimism dashed by immediate recurrence in the case in question, or by a complete absence of comparative therapeutic effect in other cases. It can only be said that this disease is unsatisfactory to treat, and that the very diversity of methods of treatment in common use merely emphasizes the inadequacy of any one as a specific curative agent.

Nor is the therapy notably simplified by proof that the streptococcus is the etiologic agent. This naturally suggests the use of agents designed to stimulate the active production of immune bodies by the patient, or to supply these substances to him by means of human or animal immune serum. The greatest deterrent, from an immunologic standpoint, to this type of reasoning is that the patient, at the height of his disease and in the face of exacerbation and extension, may be highly "immune" according to laboratory standards, although nonetheless clinically unable to arrest extension of his disease. Streptococcus vaccines are usually regarded as of no clinical utility, and ordinary polyvalent streptococcus serums are but seldom employed. The most recently developed agent of this sort is an antitoxin, prepared by the immunization of animals against the specific toxin of the erysipelas streptococcus by a method similar to that used for the preparation of scarlet fever antitoxin. The utility of this antitoxin is uncertain; although some observers express the opinion that it is clinically useful, others feel that evidences of its value fail to take sufficiently into account spontaneous variations of the disease or the occasional beneficial effect of the injection of any protein material. The action of the antitoxin is in decided contrast to other diseases, such as diphtheria and scarlet fever, in which antitoxins are used with decidedly beneficial effect. Erysipelas will continue to extend after the administration of large amounts of antitoxin. In the face of slender evidence of the specific virtues of antitoxin, the clinician must weigh its benefits against the probability of production of unpleasant reactions to horse serum. A good many competent observers presently reserve antitoxin for occasional use in less favorable cases, and especially employ it in infancy where the prognosis is poor, the likelihood of serum reactions is small, and the beneficial effect of nonspecific protein therapy is sometimes suggestively of value.

Human convalescent serum has been employed to some extent, but results have proved in disappointing contrast to those secured in scarlet fever and certain other infections treated with convalescent serum. One cannot, of course, discount the important supportive effect of transfusion in any severe disease, and transfusion of the patient from a recent convalescent supplies not only this general effect, but adds to it the possible benefit of specific immune substances and immune blood cellls.

Purely nonspecific shock therapy is not altogether to be despised; some observers still favor the use of such agents as leukocytic extracts and various other protein materials. Improvement after this type of therapy is not altogether unconvincing, but is not easily explicable. A comparatively recently developed agent for use in many types of streptococcus disease is prontosil, which is an effort at chemotherapy of these infections. This drug has been employed in erysipelas with results that are not completely disappointing. In view of the excellent experimental background of prontosil, and the poor effects of all forms of treatment in erysipelas, this agent

should be more thoroughly tried in an effort to reach final opinion. Toxic effects of the drug are apparently minimal.

Apart from measures designed for direct effect upon the etiologic streptococcus, certain forms of local treatment remain to be mentioned. The chief of these is roentgen therapy. It is difficult to state the precise manner of action of x-ray in the treatment of erysipelas: it may have some direct effect on the invading streptococcus, a stimulating effect on the local tissues, or an entirely nonspecific effect which it produces by means of protein split products. At all events, x-ray undoubtedly deserves to be placed first among the therapeutic agents at present employed in this disease. The dosage and frequency of application of therapy demand the judgment of an experienced roentgenologist. The results of treatment are frequently so prompt and striking as to leave no doubt of its usefulness. Other forms of radiation, especially ultraviolet radiation, have been employed to some extent, but are far less dependable and convincing than is the x-ray.

A variety of local applications have been applied to the lesions of erysipelas, but their effects must largely be judged by the amount of comfort they afford the patient. Especially if the disease arises from an open lesion of the skin, compressing is indicated in an effort to encourage drainage outward from the lesion. When the process is extending over the unbroken skin, it is permissible to apply almost any form of compress which produces comfort. Many patients prefer cold compresses of magnesium sulphate, boric acid, dilute aluminum acetate, etc., while others seem to derive more comfort from hot compresses. Most patients dislike the application of ichthyol or other greasy applications, and the evidence of beneficial effect from these is not convincing. The one who prefers no local treatment at all receives the sympathetic coöperation of the writer. An ingenious suggestion consists of surrounding circumscribed lesions by a line painted with collodion. The collodion, in drying, constricts the superficial lymphatics and impedes the spread of the disease, although not acting as a complete deterrent to its spread. Nothing is lost by this method if the disease is well localized, especially to an extremity, and the spread of infection, and perhaps the absorption of toxin, are in a measure slowed.

Patients with erysipelas may be ill to varying degrees. Their care usually calls for conscientious supervision and careful nursing, adequate attention to nutrition, fluid intake, and elimination. Local measures should be selected with regard to the patient's comfort. X-ray therapy should be instituted early, and may be repeatedly administered by a competent radiologist. The use of prontosil for specific chemotherapy deserves extended but experimental trial, and promises to be useful. Erysipelas antitoxin is not of great value, but may be tried in infancy or with the aged or others where the prognosis is poor.

Farm Population Reduced Slightly During 1936.—A farm population of 31,729,000 persons as of January 1, 1937, was estimated today by the Bureau of Agricultural Economics, compared with 31,809,000 on January 1, 1936. The net loss of eighty thousand persons represents the first decrease in farm population since 1929.

The bureau reported that 1,166,000 persons left farms last year, and that 719,000 moved to farms from villages, towns, and cities. But the net migration off the farms was almost entirely offset by an excess of farm births over deaths: Births were estimated at 716,000, deaths at 349,000.

The number of births on farms last year was the smallest, and the number of deaths the largest, in fifteen years of bureau records. The number of persons moving to farms was the second smallest during this period, and the number of persons moving off farms also was the second smallest.

The bureau said that "with a decrease in farm population there is a reversal of the trend observed during the years 1930-35, when farm population increased every year. Since 1910 there have been several periods when the farm population reported decreases. From 1910 to 1918 there was a decrease which became pronounced during the World War. Following the war, farm population increased until 1921.

"Farm population decreased between 1922 and 1929, and at the beginning of 1930 there were fewer people on farms than there had been at any time since the World War. From 1930 to 1936 farm population increased somewhat. During the past four years the number of people on farms has remained nearly constant, changing by less than 100,000 each year."

The figures reveal that the farm population now is little less than the peak figure of 32,076,960 persons reported for 1910, but much larger than the low of 30,169,000 persons reported for 1930. The bureau said that "the result of all the changes of the past twenty-seven years is that the farm population today is about 1 per cent less than in 1910."

Although the number of persons in the United States has increased by nearly 40 per cent since 1910, the number of persons living on farms today is slightly less than it was in that year. Since 1920, however, more people have moved from farms than to farms during every year except 1932.

The bureau pointed out that the increase in farm population between 1930 and 1935 was due more to the fact that fewer people were moving to towns and cities than to any great "back-to-the-land movement." But with the resumption of urban employment opportunities in recent years, there has been an increase in net migration from farms.

Although the net change in farm population total was slight last year, the bureau reported "pronounced changes in some of the major geographical divisions. In the West North Central and West South Central States, where the drought of 1936 was particularly severe, the decreases reported during 1934 and 1935 were continued during 1936.

"As a result of its losses, the West North Central Division on January 1 this year had fewer people on farms than in 1930. In the other geographic divisions the number of people on farms was greater than in 1930, but in the West South Central and Mountain States the differences were small. If there are further decreases during 1937, farm population in the latter regions will drop below the 1930 level. A number of states in these regions already have fewer people on farms than they had in 1930."

During 1936 there were decreases in the Mountain States, although the fact that the western portion, including Idaho and Arizona, was receiving migrants from the drought states to the east, kept the losses of the entire region at a relatively small figure.

The Middle Atlantic States, including New York, New Jersey, and Pennsylvania, also reported a decrease in farm population, as did the industrialized states of the East North Central group. In both cases the losses were due largely to migration from farms to towns and cities. In the South Atlantic and East South Central States farm population increased primarily because there were many more births than deaths in these states. Farm population in New England remained unchanged.

The patient comes to the physician for advice, consolation, and hope. If he gives none of these, he may be an excellent diagnostician and prognosticator, but he fails somewhat as a physician.