Roentgen Manifestations of Erythema Exudativum Multiforme
(Stevens-Johnson Syndrome)

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Although the syndrome of erythema exudativum multiforme has been discussed in the general medial literature with particular emphasis on the dermatological and ophthalmological aspects, little or no mention of it has been made in the American Radiological Literature. This is noted despite the fact that in many cases radiological consultation plays an important part in the management of the patients. The purpose of this paper, therefore, is to evaluate erythema exudativum multiforme with regard to its roentgen manifestations and to present two cases with characteristic roentgen findings.

Erythema exudativum multiforme was first described by Hebra\(^4\) in 1866. It was regarded as an acute self-limited mild constitutional disease of unknown etiology characterized by varying types of mucocutaneous lesions. More severe expressions of this syndrome have subsequently been recognized, however, and labeled according to the site most severely involved, e.g. eruptive fever with stomatitis and ophthalmia (Stevens and Johnson)\(^10\), ectodermosis erosiva pluriorificialis, (Rendu)\(^7\) The mucosal respiratory syndrome, (Stanyon and Warner),\(^9\) and dermatostomatitis, (Baader)\(^2\). Reiter's disease is considered a related syndrome. Robinson and McCrumb\(^4\) have grouped all of these entities together as mucocutaneous ocular syndromes. Most recently the Stevens-Johnson Syndrome has become the most popular name and is now almost synonymous with erythema exudativum multiforme.

The general clinical picture of erythema exudativum multiforme is usually characterized by a mild, self-limited acute afebrile illness with mucocutaneous involvement varying in degree from maculopapular to vesiculo-bullous. The most common sites of involvement are the skin, conjunctiva and the mucous membranes of the mouth, respiratory tract, genitalia, colon and rectum. This syndrome occurs at various ages but is seen most commonly in the second and third decades predominantly in males.

While no single specific etiological agent has been isolated, it is suspected that the disease is an allergic or hypersensitive reaction to various pharmacological and bacteriological excitants. Its occurrence has sometimes apparently been related to the administration of drugs such as aspirin, barbiturates, sulfonamides and phenolphthalein. Womack and Randall\(^11\) feel that the herpes simplex virus may frequently be implicated and

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in one case actually proved their contention with meticulous virologic and serologic determinations. Kove\textsuperscript{5} reported this syndrome had occurred after the onset of mumps.

The laboratory findings are usually completely non-specific and are of value only in excluding other more specific entities. However, in two of Finland's\textsuperscript{3} severe cases there was evidence suggesting a psittacosis-like virus. Furthermore, there are frequently high titers of cold agglutinins when pneumonia is present. Attempts to prove that the syndrome is due to the factors causing atypical pneumonia have not been convincing.

As yet no specific therapy has been propounded. Corticotropin and cortisone have been utilized with varying degrees of success. Mauriello\textsuperscript{16} feels that in his experience these drugs have done little to alter the course of the disease. The treatment is symptomatic. Antibiotics have been used to prevent secondary infection particularly when the eyes are involved. Antihistamines may be of value and should be tried.

Fortunately the prognosis is good and the disease usually runs a self-limited course with complete regression of pathology. It is important to differentiate this syndrome from other diseases because of its benignity despite its occasionally severe appearance.

The chief roentgen manifestations are in the lung, where frequently pneumonitis occurs which is indistinguishable clinically, radiologically and often serologically from primary atypical pneumonia of unknown etiology. It is probably secondary to mucosal changes in the tracheobronchial tree.

Figure 1A: On the original film the small translucent areas thought to represent sites of bronchiolar emphysema were more marked. Streaked elongated area of infiltration with irregular nodular densities in the left lower lobe are shown. The densities persisted for 72 hours and following therapy a gradual resolution with disappearance of these densities was noted. — Figure 1B: Enlargement of the left lower lobe area demonstrating the character of the infiltrations.
which may vary in location, intensity, and time of onset as do the manifestations in other portions of the mucocutaneous system. Therefore, the roentgen appearance varies accordingly. In the mild cases the pneumonitis might be manifested only by a localized prominence of the bronchovascular markings, while in some of the fatal cases almost complete consolidation of both lungs has been noted. Thirty per cent of the cases of erythema exudativum multiforme described by Ashby and Lazar, approximately 20 per cent by Mauriello and 83 per cent of the cases described by Stanyon and Warner had pneumonitis. The radiologist must be aware of the possibility of this development and should request progress films even if the initial chest film shows little or no evidence of pneumonitis.

**Case 1:** This 17 year old, white man, was admitted to the hospital complaining of fever, inflamed eyes, sore throat, dysuria, wheezing and an occasional cough, for eight days prior to admission.

He had a long allergic history with eczema and asthma since early childhood. During the two previous years at approximately the same time he had bouts of “virus pneumonia” accompanied by mouth lesions. Eight days prior to admission he became aware of a squeezing feeling in his chest at the end of inspiration, his appetite declined, he felt weak and dizzy and had an infrequent dry cough. He was diagnosed by his physician as having left lower lobe pneumonia and was given antibiotics. Shortly thereafter, his eyes became inflamed, the temperature rose to 103.5° F. and his mouth and throat became sore. Two days later he noted dysuria and was sent to the hospital for evaluation.

On physical examination he was well developed, well nourished but obviously in acute distress. The temperature was 104° F., pulse 110 and regular and respirations 24.

His lips were swollen and covered by a whitish crust. Maculopapular lesions on the dorsal and lateral aspects of the arms were noted. These varied from pin-point to 1 x 1 cm. in size. Some of these had pustular centers. A maculopapular rash on the penis with an erythematous area at the urethral orifice was noted. Vesicular lesions with erythematous margins were noted on the back.

The sclera were markedly inflamed with exudative material at the lid margins. The tongue and hard palate were coated. The uvula and buccal mucosa were inflamed.

Auscultation of the chest revealed coarse, generalised bronchial breathing with faint inspiratory and expiratory musical rales. The heart rate was rapid but otherwise unremarkable. At this time the clinical impression of Stevens-Johnson and/or Reiter’s Syndrome was entertained.

Laboratory studies of smears from the mouth and penis for fungi were negative. The sputum smear revealed many gram positive cocci, some of which were diplococci in chains. Blood cultures were negative. Sputum cultures showed normal flora. The tuberculin test was withheld. The cold agglutinins showed a trace at 1/80. The initial hemogram revealed 14.6 grams hemoglobin and white blood cell count of 6,400. The white count eventually progressed up to 16,150 but was down to 9,000 on discharge. Serological studies for psittacosis were non-reactive.

During the four days following hospital admission, his condition deteriorated. His respirations were sonorous and rattling. The fever varied from 99.6° F. to 104.4° F. and the erythema gradually became more prominent. Treatment consisted of generalized supportive measures and systemic administration of cortef and cortisone.

Five days after admission the fever began to subside and the skin lesions were starting to dry up. However, the chest symptoms persisted and eight days after admission a definite area of infiltration in the lower lobe was noted. Previously radiographic evidence of pneumonitis was not present. At this time the white count had risen and positive cultures were obtained from the eyes, therefore, he was placed on streptomycin and procaine penicillin. From then on gradual improvement was noted. Cortisone was gradually reduced and on the 18th hospital day he was discharged following almost complete resolution of the disease process.

**Case 2:** This three year old white girl was well until one week prior to admission when a small raised, slightly red area above the left brow was noted. The child was asymptomatic and afebrile at this time. Three days prior to admission lesions were found on the forearms, thighs, and were particularly prominent along scratch marks thought to be inflicted by the household cat. Her physician started sulfa drugs which
were continued until the day of admission. The lesions continued to spread and became pruritic. The day prior to admission she complained of pain in the calves and refused to walk. The day of admission her temperature was 102° F.

Her past history was non-contributory, however, a 10 year old sister had an asthmatic history and a strong history of eczema was present in her mother's family.

She was a well developed, alert, well nourished girl not appearing acutely ill. However, her temperature was 101° F., pulse 160 and respirations 28.

Rashes were present consisting of isolated and confluent lesions which were round, raised, circumscribed and had umbilicated areas. Some were crusted. Their peripheries were erythematous, indurated and scaly. Confluent areas were seen on the brows, circumorally and on the right thigh and both calves. Isolated lesions were noted on the trunk, back, neck and arms. No lesion was noted on the scalp.

The tonsils were slightly enlarged. Two large nodes were palpable in each axillar and shotty nodes were present in both inguinal regions.

The lungs and heart were unremarkable. The remainder of the physical examination was negative.

Laboratory studies included a normal EKG, negative urinalysis, elevated white blood cell count with shift to the left and no eosinophilia. Nose and throat cultures grew out pneumococci.

Five days after admission she developed conjunctivitis, mouth lesions, spiking fever, and progression of the rash, especially in the areas of the back and buttocks. It was thought that she might have Stevens-Johnson syndrome. Because she did not improve on symptomatic treatment she was started on cortisone, 200 mg. daily. The rash then improved markedly and she became more comfortable. However, eight days after admission she developed signs of pneumonia and a chest x-ray film revealed infiltration in the lower lobe of the right lung. Terramycin was begun and a gradual clearing of the pneumonitis occurred. Cortisone was discontinued at this time. However, following the recession of the pneumonitis, a recurrence of the skin rash occurred. This was quickly brought under control with benadryl and she was discharged, markedly improved 30 days after admission.

It is interesting to note that both patients present strong allergic backgrounds. The onset of the syndrome was heralded by broncho-pulmonary symptoms in Case 1, while in Case 2 no evidence of pneumonitis was noted.

![FIGURE 2: An atypical right cardiophrenic infiltration is shown.](image-url)
until the peripheral mucocutaneous and ocular findings were well established. The pneumonitis of the former was much more severe than that of the latter. Many of the cases reported by Stanyon and Warner were comparable in severity to our first case. The second case, however, was characterized on admission only by slight fever and mild rash. Despite the development of pneumonitis this child was never as severely ill as the first. Since the degree of involvement may be so variable it is possible that many mild cases of pneumonitis in conjunction with erythema exudativum multiforme may be overlooked.

Although pneumonitis is not always present, its occurrence should be anticipated so that the patient may have the benefit of alert supportive management. Despite the usually favorable ultimate prognosis, the patient may be so ill that not infrequently during the height of the illness the physician might have just cause to doubt eventual recovery. Three deaths have been reported by Finland and two by Stanyon and Warner in this syndrome. The potential severity of erythema exudativum multiforme cannot therefore, be underestimated.

SUMMARY

1. Erythema exudativum multiforme is usually an acute, mild exanthematous disease of little apparent consequence.

2. Syndrome may appear in severe forms manifested by bulbous erythematosus lesions involving the mucocutaneous areas of the body.

3. The mucosa of the respiratory tract may be involved producing pneumonitis which is radiographically, serologically and clinically indistinguishable from primary atypical pneumonia.

RESUMEN

1. El eritema exudativo multiforme habitualmente es una enfermedad moderada, exantematosas de aparentes pocas consecuencias.

2. El síndrome puede aparecer en formas severas manifestándose por lesiones vesiculosas eritematosas invadiendo las áreas mucocutáneas del cuerpo.

3. La mucosa de las vías respiratorias puede ser afectada produciendo neumonitis que no puede distinguirse radiológicamente, ni clínica o serológicamente de la neumonía primaria atípica.

RESUME

1. L'érythème exsudatif multiforme est habituellement une affection éruptive, aiguë, de moyenne intensité, et qui a peu de conséquences apparentes.

2. Dans les formes sévères, le syndrome peut se présenter avec des lésions érythémato-bulleuses atteignant la peau et les muqueuses.

3. Les muqueuses de l'arbre respiratoire peuvent être atteintes, et il en résulte une pneumopathie qui radiologiquement, sérologiquement et cliniquement, ne peut être distinguée de la pneumonie primaire atypique.
1. Erythema exsudativum multiforme ist für gewöhnlich eine akute, milde, exanthematöse Erkrankung mit wenig zutage liegenden Folgen.

2. Syndrome können in Erscheinung treten bei schweren Formen, die zur Darstellung kommen als bullöse erythematöse Herde, wobei alle Schleimhautbereiche des Körpers beteiligt sind.


REFERENCES


