SYNDROME OF CARTILAGE PATHOLOGY, DESTRUCTIVE IRIDOCYCLITIS, MULTIPLE JOINT DISLOCATIONS
Comparison with Concurrent Eye and Joint Diseases Described in Literature

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CHRONIC destructive iridocyclitis with or without cataract formation occasionally is seen associated with severe ankylosing rheumatoid arthritis. A number of other diseases of joints are associated with iridocyclitis, as described later. The patient who is the subject of this report, however, presented concurrent destructive iridocyclitis, atrophy or deformity of body cartilages, and multiple joint dislocations, without destruction of either bone or joint surface. This syndrome was not familiar to me, and I have been unable to find anything just like it described in the literature.

REPORT OF A CASE

Mrs. H. E., aged 61, when seen first, in May, 1949, complained of rheumatism and blindness. She had been considered well until January, 1947, when there developed a sequence of symptoms which was initiated by a feeling of warmth on the medial aspect of the knees. This was followed by difficulty in her assuming the erect position after kneeling; soon pain and swelling were noted in the knees. This process of pain, swelling, and limitation of motion progressed to involve the shoulders, wrists, ankles, and many of the small joints of the fingers and toes, as well as the knees.

She was hospitalized in March, 1947, and again in October, 1947, when she was given fever therapy and certain antibiotics. The diagnosis on discharge was chronic rheumatoid arthritis, chronic cervicitis, and secondary anemia. She complained a little of her eyes during this stay, and I saw her briefly one day. The only objective finding, on examining her in bed, was congestion of the bulbar conjunctiva. In the light of what followed, this was probably due to scleritis.

During the interim between her hospitalization in 1947 and my examination in May, 1949, several things occurred. The pain and swelling of the joints practically disappeared, and she was able to walk with crutches. Many of the joints of the hands and feet remained deformed, but the larger joints seemed about normal. At one time both external ears were said to have swollen like balloons and to have drained fluid. The patient's voice changed from one of high-pitched quality to one having a masculine character. Her vision began to fail in the early part of 1948, a few months after she left the hospital, and this loss progressed steadily to blindness.

The patient's past history taken at this time revealed only that she had had mastitis and pneumonia 30 years previously. With the latter alopecia developed. She had had no other illnesses and no previous rheumatism. However, she claimed to have had an unusual degree of suppleness of her joints, which she declared exceeded that of her young daughters. When questioned, she said she did not feel that this suppleness was abnormal in degree.

It was learned that her husband and seven of her eight children were living and well.

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Examination at the first visit (May 27, 1949) showed a cheery, comfortable patient, who sat in a chair like an invalid. She spoke in an unusually deep voice for a woman. The tactile tension of the eyes was low, being lower in the right eye than in the left; and both eyes were pale, save for one or two rather prominent veins crossing the sclera at the outer canthus. The extraocular movements seemed normal. The corneas were clear; the anterior chambers were shallow (the right more than the left); the irises bulged forward, as in iris bombée, and were atrophic, Grade 2 to 3. The pupillary margins were adherent to the lens capsule, and both lenses were cataractous, Grade 3. Vision was limited to light perception, being somewhat better in the left eye than in the right. The pupils were stationary, probably from adhesions. There were many pigment granules on the lens capsule in the pupillary area.

On examining the ears (Fig. 1) I noted that both pinnas were thickened, deformed, and compressed. The auditory canals were clean; the right drum membrane was pale and intact, but the left membrane was red, Grade 1. Hearing was noticeably impaired. An audiogram taken subsequently, indicated perception deafness.

There was atrophy of the cartilages of the nose—the septal, alar, and upper lateral cartilages (Fig. 1)—with a resultant saddle deformity of the lower part of the bridge and drooping and softening of the tip. On anterior rhinoscopy, the septal cartilage appeared to be entirely absent and the septum very soft and mobile. The nasal mucous membranes appeared normal; the breathing spaces were ample. Examination of the throat revealed nothing remarkable. The mandible moved freely, but there seemed to be some discomfort in the mandibular joint when the jaw was opened widely. On palpation the larynx seemed to be somewhat flattened in an anteroposterior direction.

Examination of the thorax showed the lower two-thirds of the sternum to be abnormally mobile at the manubrial joint. The rib cartilages all seemed to be soft, and the sternum retracted on inspiration. The patient could dislocate the left sternoclavicular joint at will on manipulation of the shoulder. The lower end of the ulna (Fig. 2 A, B, and C) in each arm was prominent and obviously dislocated. The phalanges were dislocated ventrally from the corresponding metacarpal bones, resulting in shortening of many fingers. Similar deformities were present in the toes. Superficial inspection did not reveal any deformity of the shoulders, elbows, knees, or pelvic joints. Atrophy of the skin was rather pronounced for a person of her age. The alopecia, which had appeared 30 years earlier, was evident.

It was thought that the patient had (1) quiescent plastic iridocyclitis and bilateral degenerative cataract, with other degenerations probable within the eyes; (2) quiescent polyarthritis
with abnormal mobility of the joints and multiple dislocations, and (3) an affection of the cartilages, resulting in atrophy and degeneration.

Because there was light perception in both eyes, cataract extraction, though fraught with hazards, was thought worthy of consideration.

The patient was studied further on July 21, when she was brought to the office and examination made with a corneal microscope. On the right, this study revealed punctate opacities in the superficial layers of the cornea over the medial pupillary area, but the remainder of the cornea was clear. The iris was atrophic, Grade 3. There seemed to be adhesions over much of the posterior surface of the lens. Pigment was present on the anterior lens capsule, and numerous blood vessels were seen in the iris, many of them crossing the edge of the pupillary margin from behind to the anterior surface. The lens was cataractous, Grade 4, and the anterior chamber was almost empty. On the left, the cornea showed a number of old keratic precipitates on the posterior surface and fine, lace-like opacities on the anterior surface, but otherwise it was reasonably clear. The anterior chamber was about one-half the normal depth. There was a moderate degree of iris bombé; the iris was similar to that of the right eye except that the atrophy and vascularility were not so pronounced in the left eye. There was no pupillary reaction, and the lens was cataractous, Grade 4. Intraocular tension, measured with both the Schiötz and the McLean tonometer, was 0 in the right eye and 13 mm. in the left.

Subsequently, the patient was photographed (Figs. 1 and 2); roentgenograms (Fig. 3) of many of the joints were taken, and blood studies were instituted. On August 24, the sedimentation rate was 13 mm. in one hour; the red blood cells numbered 3,980,000, with 85% hemoglobin; there were 7,650 leukocytes and a normal differential count except for 11% eosinophiles (49% polymorphonuclear neutrophiles, 35 lymphocytes, 1 basophile, 4 monocytes, and 11 eosinophiles). The urine was normal; there was no alkaptonuria. The blood phosphorus was 4.06 mg., and the blood calcium 10.75 mg., per 100 cc.

On Feb. 15, 1950, a preliminary iridectomy was done on the left eye. It was deemed wise to see how the eye would tolerate surgery before an attempt was made to free and extract the lens. The pathologist reported that there was no significant inflammatory or neoplastic change in the small piece of iris received for examination. It did, however, exhibit atrophic changes and thickening and hyalinization of the walls of the small vessels. The postoperative course was uneventful. When she was seen on March 7, the anterior chamber of the left eye was very shallow; there was some congestion of the iris, but not appreciably more than before the operation. The tactile tension in the left eye was low, but still somewhat higher than that of the fellow eye; when measured on the McLean tonometer it was 0 in the right eye and 6 mm. in the left eye.

About April 1, 1950, there occurred the first noteworthy exacerbation since the remission of symptoms after her illness, three years earlier; this exacerbation consisted in moderate swelling and pain in the joints; the eyes remained quiet. Laboratory data were procured when the patient was hospitalized for several days in May, 1950. Urinalysis was noncontributory, showing only 0 to 8 white cells and 0 to 1 red cell, per cubic millimeter. The icterus index was 7 units; erythrocytes numbered 4,100,000; the hemoglobin was 12 gm. per 100 cc., or 84%. There were 6,900 leucocytes; a differential white cell count showed 2 basophiles, 3 eosinophiles, 1 stab cell, 54 segmented polymorphonuclear neutrophiles, 37 lymphocytes, and 3 monocytes. The sedimentation rate was 53 mm. an hour. The cephalin-cholesterol flocculation test gave a 3+ reaction in 24 hours and a 4+ reaction in 48 hours. Plasma albumin was 4.28 gm. per 100 cc., and plasma globulin, 2.40 gm. per 100 cc. Bence Jones protein was not found in the urine. A second determination of the sedimentation rate, one week after the first, showed 44.5 mm. an hour. Tests for brucellosis were reported as negative, and a blood Wassermann test, done elsewhere, gave a negative reaction.

A biopsy specimen taken from the cartilidge of one of the external ears was studied for amyloid by three pathologists, none of whom was very certain as to what it showed.

Roentgenograms (Fig. 3) were made of the pelvis, the lumbar portion of the spine, the left shoulder, the right knee, the right hand, and the right wrist. All the bony structures showed marked osteoporosis, without selection of any portion of the bones. There were conspicuous thinning of the bony cortex in all bones and slight narrowing of the hip-joint spaces, but the bony contours were normal. The sacroiliac joints were normal, and the pelvis was normal.
Fig. 2.—Deformity of the hand and wrist resulting from multiple dislocations due to extreme laxness of the joint ligaments. A, ulna at rest; B, ulna lifted; C, dislocation of proximal phalanges toward the palmar surface of the hand. Neither the carpals nor the phalanges showed any enlargement or ankylosis, either clinically or roentgenologically.

Fig. 3.—Roentgenographic views of one hand, showing the dislocations. There is extensive osteoporosis; otherwise the bony contours all appear normal except for the lower end of the ulna. The interphalangeal spaces appear somewhat narrowed, as though the cartilages were thinned or gone.
except for osteoporosis, as were the left shoulder joint and the right knee. There was considerable fluid within the knee joint and the suprapatellar bursa, which was greatly distended. No significant narrowing of the joint spaces (wrist, knee, and hip) was noted, with the possible exception of the phalanges; but there was complete anterior dislocation of the metacarpophalangeal joints, save for those of the thumb. The ulna was dislocated posteriorly, with atrophy and possibly some destruction at the distal end. One small fragment was loose in the soft tissues.

The roentgenologist concluded that many of the findings were similar to those in rheumatoid arthritis but differed in that there was no marked abnormality of bone other than osteoporosis, no destruction of joints, and no ankylosis. There were severe deformities, but these seemed to be due entirely to dislocation, and not to bony enlargement or other abnormality (Fig. 4).

The exacerbation gradually subsided, and the patient returned to her previous state in July, 1950. The left cataractous lens was extracted Nov. 29, 1950. The adhesions between the iris and the lens separated rather readily, and the lens, which was found to be almost spherical, was extracted intracapsularly without great difficulty. Upon removal of the lens, a white, dense retrolental membrane was seen stretching across the anterior portion of the vitreous chamber. The corneal flap was lifted, and an incision was made through the center of this membrane.

Fig. 4.—Comparison of the hip joints in the case here reported (A) and a case of usual rheumatoid arthritis with complicating iridocyclitis (B). In the case here reported (A) there was no joint destruction, and vision had been lost in both eyes. The joint in B shows extensive destruction of the acetabulum and the head of the femur, with lipping of the joint and ankylosis; the patient has lost vision in one eye. The involvement and destruction of the ocular structures were more extensive in the case here reported (A) than in the other (B). Both patients were bedridden, the one (A) because of dislocations and the other (B) because of extensive ankylosis. (Fracture, just below the trochanter in B was sustained on manipulation incidental to cystoscopy.)

Instead of normal, clear vitreous, a brownish-yellow fluid appeared. No vitreous was seen. The postoperative course was uneventful, the eye healing with very little reaction. When the bandage was removed, the patient complained rather bitterly of strong light; but, for all practical purposes, the eye remained entirely blind. Apparently, the vitreous, retina, and ciliary body had been irreparably damaged by the disease process. The eye remained soft. This would ordinarily lead one to assume that there was a dearth of aqueous formation. However, an air bubble left in the anterior chamber disappeared at about the same rate as it does in the ordinary case of cataract extraction.

Examination of the eyes on June 8, 1951, showed normal lids bilaterally. The conjunctival surfaces were not remarkable. Tactile tension was zero in both eyes. The right cornea was clear, and the sclera was not congested but contained three prominent vessels running roughly parallel
with the medial, lateral, and inferior rectus muscles. These vessels began just a little posterior to the limbus and extended backward over the globe. The anterior chamber was practically collapsed. The iris was atrophic, Grade 3, and the lens was cataractous, Grade 4. On the left, there were vessels similar to those described on the right, together with slight circumcorneal congestion. The cornea was clear in the central portion, but close to the limbus, especially above, it was somewhat cloudy. A few faint radiating folds crossed the cornea from 12 o'clock downward (just such folds as one sees in the cornea when a corneoscleral suture has been pulled too tightly at the end of operation). These radiating folds were indicative of great softness of the eye. The anterior chamber was deep in the central portion; the peripheral portion seemed to be very shallow. The coloboma of the iridectomy was not seen very well because of the cloudiness in the upper part of the cornea. The retrolental membrane was still present and still lay in a plane somewhat posterior to that of the iris. The iris was atrophic, Grade 3. There was no pupillary reaction in either eye, and apparently light perception had been lost in both.

REVIEW OF LITERATURE

Although there is an extensive literature on concurrent eye and joint disease, it is somewhat confusing, and a search failed to reveal any literature on a syndrome involving cartilages outside the joints. Godtfredsen,2 of Copenhagen, published a

<table>
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<th>Table 1.—Incidence of Ocular Symptoms Complicating Joint Diseases*</th>
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<tbody>
<tr>
<td><strong>Acute joint diseases</strong></td>
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<tr>
<td>Conjunctivitis, %</td>
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<td>Iritis, %</td>
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<tr>
<td>Keratoconjunctivitis Sierus Syndrome, %</td>
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<tr>
<td>Rheumatic fever ...........................................</td>
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<td>Gonorrheal arthritis .......................................</td>
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<td>Reiter's disease ............................................</td>
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<td>Urtic arthritis .............................................</td>
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<tr>
<td>Chronic joint diseases</td>
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<tr>
<td>Primary progressive chronic polyarthritis ........................</td>
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<td>Still's disease .............................................</td>
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<tr>
<td>Ankylopoietic spondylarthritis (Bechterew-Strümpell-Marie disease)</td>
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* After Godtfredsen.2


study of concurrent eye and joint disease in 1949. He classified rheumatic joint
disease complicated by ocular symptoms, as indicated in Table 1. He listed further
diseases with concurrent symptoms referable to the eyes, joints, skin, and mucous
membranes, as seen in Table 2.

Reiter’s syndrome consists in polyarthritis, urethritis, and conjunctivitis. It was
especially prevalent after World War II. Still’s disease (multiple rheumatoid
arthritis) is a chronic polyarthritis of children, especially girls, which leaves iris
adhesions. Ankylopoietic spondylarthritis (Bechterew-Strümpell-Marie disease)
involves the sacroiliac joints and the spine and is frequently complicated by iritis.
The ocular symptoms are infrequent in the common joint diseases and frequent in
the rarer diseases. The pathogenesis is probably the same for both the eye and the
joints and is likely allergotoxic in nature. Phlyctenules, episcleritis, Aschoff nodules
in the heart, and rheumatic nodules on the skin are all similar histologically. They
show polymorphonuclear neutrophiles, small lymphocytes, and epithelioid cells,

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<th>Table 2.—Diseases with Concurrent Symptoms from Eyes, Joints, Skin and Mucous Membranes *</th>
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<tr>
<td>Virus diseases of obscure origin</td>
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<tr>
<td>Reiter’s disease</td>
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<td>Stevens-Johnson syndrome</td>
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<tr>
<td>Foot-and-mouth disease</td>
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<tr>
<td>Behcet’s syndrome</td>
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<tr>
<td>Acute disseminated lupus erythematosus</td>
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<tr>
<td>Measles; chickenpox</td>
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<tr>
<td>Bacterial diseases</td>
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<tr>
<td>Gonococcal sepsis</td>
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<td>Streptococcal sepsis</td>
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<tr>
<td>Intoxications</td>
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<tr>
<td>“Sanocrysin” (gold sodium thiosulfate); arsenicals</td>
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<tr>
<td>Serum sickness</td>
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* After Godtfredsen. 
† (+) means “less significant.”

which are sometimes polymorphonuclear. Godtfredsen stated that the blood-aqueous
and the blood-synovial barrier are similar and that the ciliary processes of the eye and
the synovia of the joints are alike susceptible to streptococci.

The Stevens-Johnson syndrome is a form of exudative erythema multiforme with
conjunctivitis and stomatitis. Behcet’s syndrome involves ulceration of the genitals
and mouth, together with uveitis and joint disease.

It has been suggested that this condition may be a case of Ehlers-Danlos syn¬
drome (cutis hyperelastica). It is true that the hyperlaxity and hyperextensibility
of the joints might suggest this, but none of the other characteristics is present.
Moreover, the Ehlers-Danlos syndrome usually occurs in youth, whereas this

patient's trouble did not have its inception until the end of the sixth decade of life. In addition, this patient has suffered destructive iridocyclitis with blindness and damage or destruction of certain cartilages, none of which are commonly associated with the Ehlers-Danlos syndrome. In my opinion, the latter syndrome can be ruled out.

SUMMARY

A syndrome is described which seems to be unique. It consists of destructive iridocyclitis with cataract formation and other degenerations within the eyes, hyperlaxity and dislocation of many joints, without destruction of joint surfaces, and the involvement of other body cartilages in atrophy or other destructive changes. The changes in the eyes began as slight discomfort and congestion and progressed to severe iridocyclitis with keratic precipitates, atrophy of the iris, mature cataract, and extreme hypotony. There was a retrolental fibrous layer in the one eye, which was operated upon. All vision was eventually lost in both eyes. The articular changes seemed at first to be related to rheumatoid arthritis but differed in that there was no ankylosis of the joints and little or no damage to the joint surfaces. On the other hand, the joint capsules were so exceedingly lax that multiple dislocations had resulted. The cartilages of the nose had disappeared as far as can be determined. The cartilages of the ear became hypertrophic and extremely deformed. The rib cartilages became very soft and the joints about the sternum amazingly mobile. The condition does not seem to fit into any of the syndromes of concurrent eye and joint disease which are described in the literature.

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