CONJUNCTIVAL BIOPSY IN SARCOIDOSIS

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Excisional biopsy, under slit lamp visualization, makes conjunctival biopsies a viable alternative to bronchoscopy as the initial diagnostic step. The authors report their experience on excisional biopsies of the palpebral conjunctiva in 16 patients suspected of having sarcoidosis.

Although Walsh emphasized 40 years ago that the conjunctival cul-de-sac was often involved by sarcoidosis, it was 16 years later before Crick described a safe, complication-free technique for excisional biopsy in suspected sarcoidosis patients.[1,2] The excisional biopsy under slit lamp visualization and ease of performance make conjunctival biopsies a viable alternative to bronchoscopy as the initial diagnostic procedure. We report herein the results of excisional biopsies of the palpebral conjunctiva in subjects suspected of having sarcoidosis.

METHODS AND MATERIALS

Patient Population

Sixteen black subjects had excisional biopsies performed at the North Carolina Memorial Hospital (NCMH), Chapel Hill, North Carolina. There were 11 females and five males whose ages ranged from 17 to 43 years. All subjects resided in eastern North Carolina and no patient had a previous tissue diagnosis, though all had ocular findings consistent with sarcoidosis.

Biopsy Technique

The cul-de-sac of the lower eyelid was anesthesized with a single instillation of proparacaine hydrochloride. A cotton tip applicator soaked with 4% cocaine was applied to the area to be biopsied. Each subject was positioned comfortably at a Haag-Streit 900 slit lamp while an assistant held the eyelids widely open. The subject was asked to look up as gentle digital pressure was applied through the lower eyelid. This maneuver usually revealed solid yellowish-gray nodules arising near the junction of the palpebral and bulbar conjunctivae (Figure 1). The authors sometimes observed, as have others,[3] the enlargement of these nodules to symblepharon formation (Figure 2). The area to be biopsied was grasped with small toothed forceps and excised with Westcott scissors. Local antibiotic ointment and a pressure dressing were immediately applied as suturing was not necessary. The subject was instructed to keep the pressure dressing in place for 24 hours.

Pathology

The conjunctival biopsies measured 1.4-7 mm in length, by 1-2 mm in depth. The tissue was fixed

Read before the Ophthalmology Section, 83RD Annual Convention and Scientific Assembly of the National Medical Association, Detroit, Michigan, August 1, 1979. Requests for reprints should be addressed to Dr. John C. Merritt, Department of Ophthalmology, 617 Clinical Sciences Bldg, 229H, Chapel Hill, NC 27514.

Figure 1. Sarcoid follicles (arrows) in the palpebral conjunctiva

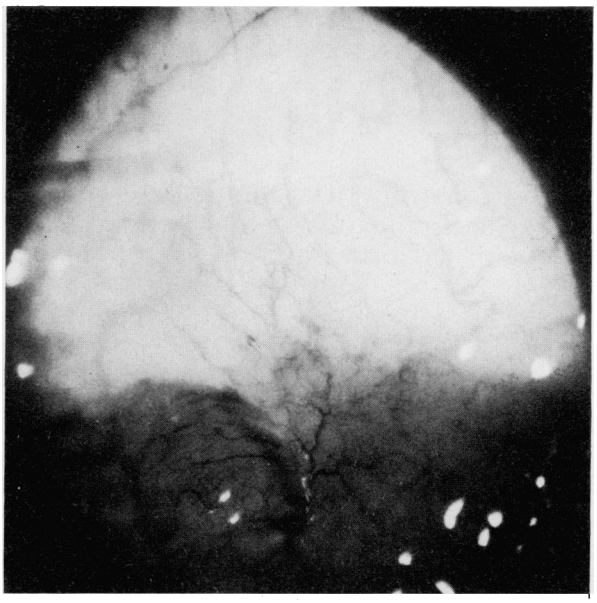

Figure 2. Enlargement of a follicle to symblepharon formation

in a 10% formaldehyde solution and prepared for routine histology. Hematoxylin and eosin stained sections were examined. A Ziehl-Neelsen stain for acid and alcohol-fast bacilli was performed on all sections. A minimum of ten serial sections were examined.

RESULTS

Twelve of 16 specimens (75 percent) contained granulomas consistent with sarcoidosis. Three subjects whose tissue was nondiagnostic did have classic ocular features of sarcoid, while two were later diagnosed as sarcoidosis by biopsy of extraocular tissue. Eleven biopsies showed the presence of granulomas often in a subepithelial situation (Figure 3), and occasionally deeper within the stroma. Granulomas were single and crisply defined in most cases, but were sometimes massive and confluent with a multilobular configuration. A small amount of central caseous necrosis was seen in two cases. Variable numbers of lymphocytes surrounded the granulomas that consisted of epithelioid histiocytes and Langhans giant cells (Figure 3). In 3 of the 11 positive biopsies, granulomas were only detected in deeper sections. Ziehl-Neelsen stains were negative. Subepithelial lymphoid follicles often containing active germinal centers were noted in most biopsies, including those without granulomas.

DISCUSSION

Sarcoidosis has replaced syphilis as the "great imitator" in southeastern United States. Though whites are sometimes affected by this obscure disease, young blacks, especially females (ages 20 to 35), seem to be more commonly involved. Patients from certain counties in eastern North Carolina (Nash, Pitt, Wilson, Edgecombe, and Lenoir) seem to have a higher prevalence of sarcoidosis, though these trends may merely reflect patient referral patterns to NCMH. These observations are not new, as Young has identified a "sarcoid belt" in southeastern United States where the disease seems exceedingly prevalent.[4]

The clinical triad of mutton fat precipitates on the corneal endothelium and inflammatory cell exudation into the anterior chamber, which settles on the iris forming whitish nodules, comprise the most common ocular presentations of sarcoidosis

TABLE 1. CONJUNCTIVAL BIOPSY FOR SARCOIDOSIS

	Total No. Biopsies	Control Biopsy	No. Sarcoid elsewhere	Sarcoid Suspect	+* No. (%)	Complications Reported	Comments
Bornstein[5] (Chicago)	94	28	52	12	16 (25)	None	Done blindly
Crick[6] (London)	100	37	34	29	15 (24)	None	Author noted that biopsy success rate was 50 percent when typical follicles seen
Khan[7] (New York)	100	40	60	0	20 (33)	None	Done blindly

*Positive biopsies

(Figure 4). Conjunctival lesions are found in 50 percent of cases when careful slit lamp biomicroscopy is performed. Our percentage of positive biopsies was 75 percent when typical follicles were visualized. These data, as well as those from larger series (Table 1), should prompt the ophthalmologist to perform an excisional biopsy of the conjunctiva whenever suspected sarcoidosis lesions are observed. The ease of performance, lack of complications, and specificity of conjunctival biopsy argue that this should become a more widely used outpatient diagnostic procedure for sarcoidosis, especially in areas of the southeastern United States where this disease seems endemic.

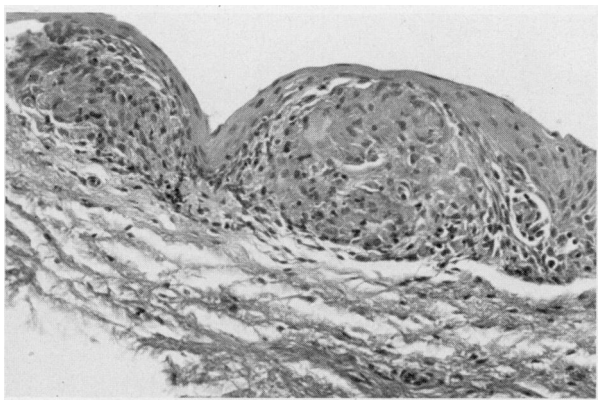

Figure 3. Discrete subepithelial granuloma elevating conjunctival contours (Hematoxylin and eosin ×250)

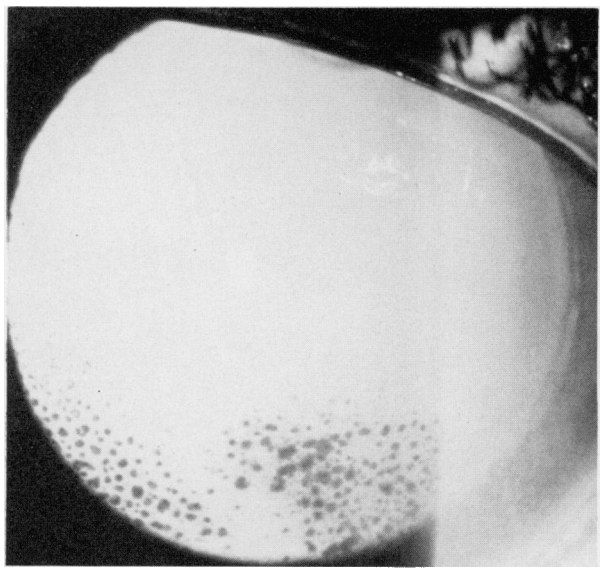

Figure 4. Mutton fat precipitates on endothelium surface of cornea as seen by retroillumination

Literature Cited

1. Walsh FB: Ocular importance of sarcoid—its relation to uveoparotid fever. Arch Ophthalmol 21:421-438, 1939

2. Crick R, Hoyle C, Mather G: Conjunctival biopsy in sarcoidosis. Br Med J 2:1180-1181, 1955

3. Flach A: Symblepharon in sarcoidosis. Am J Ophthalmol 85:210-214, 1978

4. Young RC, Titus-Dillon PY, Schneider ML, et al: Sarcoidosis in Washington, DC—clinical observations in 105 black patients. Arch Intern Med 125:102-105, 1970

5. Bornstein JS, Frank MI, Radner DB: Conjunctival biopsy in the diagnosis of sarcoidosis. N Engl J Med 261:60-64, 1962

6. Crick RP: Diagnostic conjunctival biopsy in sarcoidosis. Trans Ophthalmol Soc UK 76:403-412, 1956

7. Khan F, Wessely Z, Chazin SR, et al: Conjunctival biopsy in sarcoidosis: A simple, safe and specific diagnostic procedure. Ann Ophthalmol 9:671-676, 1977