

## LUPUS VULGARIS FOLLOWING BCG VACCINATION

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## Summary

Three cases of lupus vulgaris developing at the site of BCG vaccination are reported. All the patients had lesions starting before the age of 15 years. Clinically and histologically the lesions were indistinguishable from spontaneous lupus vulgaris. Treatment with streptomycin and isonicotinic acid hydrazide for 1 year produced complete resolution of lesions.

KEY WORDS: Lupus Vulgaris, B.C.G. (Bacillus Calmette Guérine) vaccination Tuberculosis of skin.

Lupus vulgaris following BCG vaccination was first reported by Kristjanson in 1844. Since then there have been many similar case reports especially from Denmark<sup>1-3</sup>. BCG vaccination is routinely done in this country for all individuals below the age of twenty years. However, to our knowledge, there has been any report of lupus vulgaris occurring as a complication of BCG vaccination from India. We report three cases seen during a period of six years from 1973 to 1978.

vaccination as an erythematous papule on the left shoulder at the vaccination site and had been gradually increasing in size with ulceration and scarring. There was no history of any constitutional symptoms nor any systemic complaints.

Examination revealed an erythematous, indurated plaque with scarring (19 x 10 cm) on the right shoulder with ulceration and crusting at places (Fig. 1).

## Case Reports

## Case 1

A six year old boy had an erythematous indurated plaque with scarring and ulceration on the right shoulder for two and half years. The lesion developed three months after BCG

Haemogram was normal except for an ESR of 33 mm in the 1st hr (Wintrobe's method). Routine examinations of urine and stool and skiagram of the chest were normal. Tuberculin test with 10 TU showed a positive reaction of 20 mm size. Histology showed multiple compact granulomas in the upper and mid-dermis, consisting of histocytes, epithelioid cells and a few giant cells (Fig. 2), compatible with a diagnosis of lupus vulgaris.

Culture of the tissue on Lowenstein - Jensen medium and guinea pig inoculations did not yield any organisms.

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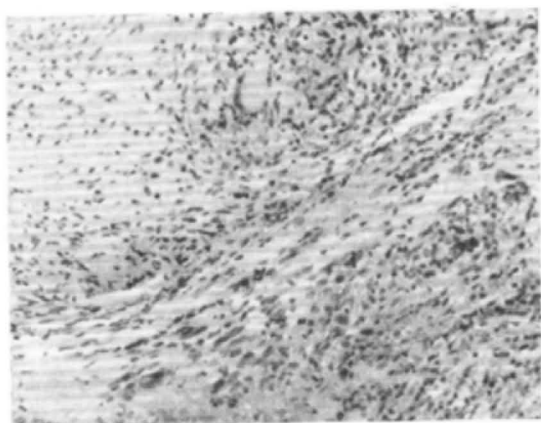


**Fig. 1** Indurated plaque with scarring, ulceration and crusting at places on right shoulder in a 6 year old boy.

Laboratory examinations revealed a raised ESR of 3 mm in the 1st hour. Examination of stools, urine, and skiagram of the chest were normal. Tuberculin test with 10 TU showed a strongly positive reaction with 20 x 18 mm induration. Biopsy showed granulomas in the upper and mid dermis, compatible with a diagnosis of lupus vulgaris.

### Case 3

A 12 year old boy presented with an indurated, erythematous and scaly plaque on the left shoulder of three years' duration, which had started as an erythematous papule following BCG vaccination and had since been gradually increasing in size.



**Fig. 2**

Microphotograph showing compact granuloma in upper dermis, consisting of histiocytes, epithelioid cells and a few giant cells.

### Case 2

A 15 years old girl presented with a red, scaly, indurated plaque on the left shoulder of 5 years duration. The lesion had started as a papule and was spreading since then. There was no history of any constitutional or systemic complaints.

Examination showed an indurated plaque measuring about 8 cm diameter on the left shoulder with crusting and scaling at places (Fig. 3).

Examination showed an indurated scaly erythematous plaque of 18 x 10 cm size on the left shoulder, extending upto middle of the upper arm (Fig. 4).

The patient had no history of any systemic complaints. There was no regional lymphadenopathy or abnormal findings on systemic examination.

The haemogram, urine, stool examination and skiagram of chest were normal. Biopsy showed granulomas in the dermis, suggestive of lupus vulgaris.

### Discussion

Untoward reactions to BCG vaccination may be 'non-specific' such as local eczema, keloid formation, and epithelial cysts; or 'specific' such as scrofuloderma, subcutaneous abscess, lupus vulgaris, Koch's phenomenon, regional or universal adenitis and tuberculid<sup>4</sup>. Other non-specific lesions mentioned include urticaria, erythema nodosum, erythema multiforme and granuloma annulare<sup>6</sup>. Cutaneous and lymph node involvement comprise the majority of specific complications (i.e., tuberculous disease caused by BCG). Lupus vulgaris may develop at or around the site of BCG vaccination. The cutaneous lesion usually develop within a few months though, at times the time lapse may be 1-3 years. Jorgenson and Horwitz<sup>4</sup> contended that lupus vulgaris following BCG occurs only in adults. However, there are other reports of its occurrence in younger age groups, including infants<sup>5,6</sup>. The cases presented here occurred in young individuals.



**Fig. 3** Indurated plaque with crusting and scaling on left shoulder in a 15 year old girl.

Factors which might be responsible for the development of a 'tuberculous'

lesion following BCG vaccination include the inherent resistance of the individual, virulence of the BCG organism, the amount of inoculum and the technique of inoculation<sup>7</sup>. Most important of these is perhaps the fact that the virulence of the BCG organism is almost same as that of the *M. tuberculosis* isolated from lupus vulgaris tissue<sup>3</sup>. In such a situation, a larger dose of the inoculum will, perhaps, facilitate the initiation of granuloma formation.



**Fig. 4** Indurated scaly erythematous plaque on left shoulder in a 12 year old boy.

Clinical and histological features of lupus vulgaris following BCG vaccination do not differ from spontaneous lupus vulgaris. However, the course is said to be 'milder'<sup>4</sup>.

In all the three cases presented above, there is enough evidence to suggest that these lesions of lupus vulgaris followed BCG vaccination at the same site. The diagnosis was confirmed by histopathology and was further substantiated by successful treatment with antitubercular drugs for 1-1½ years. In none of the cases the causative organism or the tubercle bacilli could be isolated.

**References**

1. Horwitz O: BCG Vaccination complicated by Koch's phenomenon and lupus vulgaris, Act Tub Scand 1976; 30: 259-270.
2. Lomholt S: Lupus vulgaris developed in the reaction to a calmette vaccination Acta Tub Scand 1944; 20: 136-140.
3. Marcussen PV: Lupus vulgaris following BCG Vaccination, Brit J Dermatol 1954; 66: 121-128.
4. Jorgensen BB and Horwitz O: Dermatological complications of BCG vaccination, Acta Tub Scand 1956; 32: 179-194.
5. Dostrovsky A and Sagher F: Dermatological complications of BCG vaccination, Brit J Dermatol 1963; 75:181-189.
6. Zapasnik KHH, Kucewicz A and Szubinski J: Observation on lupus vulgaris after BCG vaccination. Gruzlica Chor Pluc, 1969; 27: 255-260. (English translation, Excerpta Medica, 1969)
7. Heal FRG: BCG vaccination, Lancet 1955; 1: 315-320.

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