

BCG LYMPHADENITISVijayakumar Hegde¹**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: Background: The World Health Organization (WHO) has recommended Bacillus Calmette-Guerin (BCG) vaccination as a part of the global expanded program for immunization. Although the BCG vaccine is usually a safe vaccine, a number of complications with lymphadenitis being the most common complication, can occur. **AIM:** The aim of the present study was to evaluate the clinical presentation and the histomorphological features of BCG adenitis in children. **RESULTS:** A total of 60 patients with BCG lymphadenitis presented between June 2010 and December 2013. The most common age of presentation was 3 months. In the majority (50) of the cases, the lymphadenitis involved ipsilateral left axillary nodes. Other sites of involvement included the left supraclavicular lymph nodes in 5 (8.3%) patients, and both the left axillary and supraclavicular lymph nodes were involved in 5 cases (8.3%). All the patients had history of BCG vaccination prior to the onset of lymphadenitis. **CONCLUSION:** Diagnosis of BCG lymphadenitis is clinical. Parental education and awareness among paramedical personnel, including general practitioners, is essential so that prompt recognition and management of BCG adenitis can be ensured.

KEYWORDS: Tuberculosis, Lymphadenitis, BCG.

INTRODUCTION: The Bacillus Calmette-Guerin (BCG), a live attenuated vaccine with a characteristic residual virulence, has been used to prevent tuberculosis since 1921.¹ The World Health Organization (WHO) has recommended BCG vaccination as a part of the global expanded program for immunization (EPI). As India has an annual tuberculosis (TB) incidence rate of 121 cases/100, 000 people, the national immunization program still includes neonatal BCG vaccination.²

Although the BCG vaccine is usually a safe vaccine, a number of complications can occur, such as adverse local reactions, regional lymphadenitis, osteomyelitis and disseminated infection in immunocompromised children, with lymphadenitis being the most common complication.^[3] It is therefore important to diagnose BCG lymphadenitis early.

MATERIAL AND METHODS: The present study comprised of 60 infants who presented with lymphadenitis with a history of BCG vaccination. The relevant history was noted from medical records department. The specimens sent were lymph nodes. The gross morphology was noted. Paraffin embedded sections were then studied after staining with Hematoxylin and Eosin stains. Ziehl Neelsen stain was done for acid fast bacilli in all the cases.

RESULTS: In the present study, a total of 60 infants presented with BCG lymphadenitis between June 2010 and December 2013. All the infants were born full term and there were no signs of immunodeficiency. The most common age at presentation was 3 months and the least common was 9 months. BCG lymphadenitis was more commonly seen in males (75%) than in females (25%).

In the present study, the most common site involved was ipsilateral axillary lymph nodes followed by ipsilateral left supraclavicular lymph node.

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Age (Months)	Frequency (%)
1 to 2	7 (11.6)
3 to 4	40 (66.67)
5 to 6	5 (8.3)
7 to 8	5 (8.3)
>9	3 (5)

Table 1: The age distribution of infants with BCG Lymphadenitis

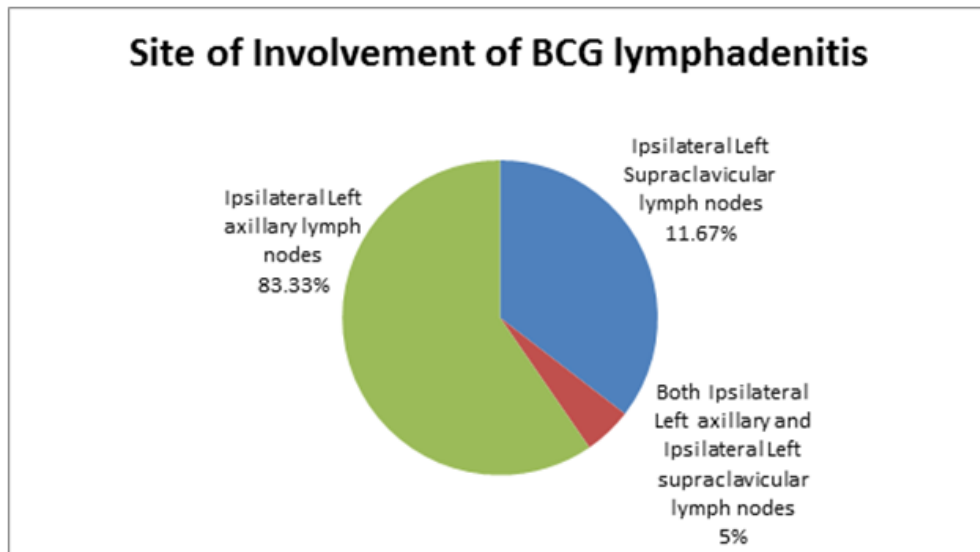


Fig. 1: Site of Involvement of BCG Lymphadenitis

Sl. No.	Gross changes	Cases (60)	Sl. No.	Microscopic Changes	Cases (60)
1	Matting	60	1	Epithelioid cell Granuloma	60
2	Cheesy cut surface	55	2	Caseous Necrosis	55
3	Grating sensation while cutting	5	3	Langhans giant cells	50
			4	Non-Langhans giant cells	10
			5	Neutrophils	10
			6	Lymphocytes	60
			7	Plasma cells	5
			8	Fibrosis	10
			9	Calcification	5

Table 2: Gross and Microscopic changes seen in BCG Lymphadenitis

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DISCUSSION: BCG vaccine was introduced to the world in 1921. It was incorporated in the World Health Organization (WHO)'s Expanded Program on Immunization in 1974 to strengthen the fight against TB meningitis and disseminated TB in young children and infant of developing country.

Although it does not prevent the establishment of primary TB infection or the reactivation of latent TB, BCG vaccine is considered an important part of TB control measure in endemic areas.

Normal inoculation site reactions include up to 5 mm of erythematous induration, which progresses to a bluish-red pustule two to three weeks post-vaccination, subsequent ulceration, drainage, exudative crust formation after four to six weeks, and full healing 10-12 weeks post-vaccination, leaving a small residual scar.

Scar formation is indicative of successful BCG vaccination. However, a scar does not occur in all BCG recipients.⁴ This may be due to a personal idiosyncrasy, faulty vaccination technique or inefficacy of the vaccine. The incidence of lymphadenitis is influenced by host- and vaccine related factors. A number of factors such as the age of the child, the technique of vaccination, the BCG strain, the dose, potency, viability and immunogenicity of the vaccine, and prior exposure to mycobacterial antigens are implicated in the pathogenesis of lymphadenitis.

In the present study, male gender predominated in 75% of cases. Similar findings were observed in a study by Bukhari E et al.⁵ Most of the cases presented within six months of age with maximum cases at 3 months of age. [Table 1] This result was similar to a study from Iran, where all 26 cases studied (100%) developed lymphadenitis within six months.³

In the present study, the most common site of involvement was ipsilateral axillary lymph nodes followed by ipsilateral left supraclavicular lymph nodes. [Figure 2] Similar findings were observed in a study by Bukhari E et al.

In the present study, the average size of the matted lymph nodes sent for histopathological study was 2.5cm. The gross morphology included yellow cheesy appearance in all the cases. Grating sensation while cutting was observed in 5 cases (8.3%). BCG adenitis was labeled based on the following criteria: isolated axillary or supraclavicular lymph node enlargement, BCG vaccination on the ipsilateral arm, and the absence of local or systemic signs of inflammation.⁶

Microscopically, the findings included epithelioid cell granulomas, caseous necrosis, Giant cell reaction, inflammatory infiltrate, fibrosis and calcification. [Table 3]. Similar findings were observed in a study on morphological changes in Tuberculous lymphadenitis by Ayesha sarwar et al ⁷. Therefore, the morphological changes seen in BCG lymphadenitis are similar to those seen in Tuberculous Lymphadenitis.

CONCLUSION: The clinical and morphological features of BCG lymphadenitis are similar to those of classical Tuberculous lymphadenitis. The complications may range from simple to severe depending on the stage and progression of disease. Parental education and awareness among paramedical personnel, including general practitioners, is essential so that prompt recognition and management of BCG adenitis can be ensured.

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