

# A Spider like body in Keratocystic Odontogenic Tumor - A Paradoxical find

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## ABSTRACT

Inclusion bodies are nuclear or cytoplasmic aggregates of proteins that may be formed due to infections or genetic disorders. Asteroid body is one such inclusion that is eosinophilic and spider like that are usually found in infections like sarcoidosis and sporotrichosis. Inclusions are usually pathognomonic of certain diseases and conditions, navigating the pathologist to arrive at a diagnosis. But, here we report an unusual finding of an asteroid body encountered in an inflamed keratocystic odontogenic tumor.

**Key Words:** Asteroid body, keratocystic odontogenic tumor, spider like body.

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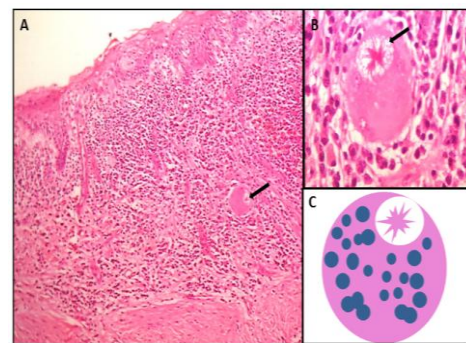
## Introduction

Asteroid bodies (ABs) are cytoplasmic inclusions in giant cells.<sup>1</sup> The word asteroid means 'like a star' in ancient Greek, as these bodies resemble stars. Variety of descriptive terms have been used to designate them namely: fat needle stars, spider or speculated bodies, astrospheres, stellate or radial inclusions etc.<sup>2</sup>

Dr. S. B. Wolbach in 1911, using H& E stain originally described asteroid bodies, as "the type of structure with a single round to ovoid central body (5 to 6  $\mu$ ) with variable radiating straight or curved spinous projections (25  $\mu$ ) exhibiting different staining reactions, while under frozen section they appear colourless". After three decades, Friedman in 1944, related it as eosinophilic inclusion bodies having radiating spokes in the vacuolated area of cytoplasm of multinucleated giant cells evoking images of spiders or open umbrella. Thus the nomenclature "asteroid body"

for star-shaped intracellular structures was standardized.<sup>3,4</sup> Since then, frequent occurrences of such bodies are reported selectively in multinucleated giant cells of sarcoid granulomas.<sup>3</sup>

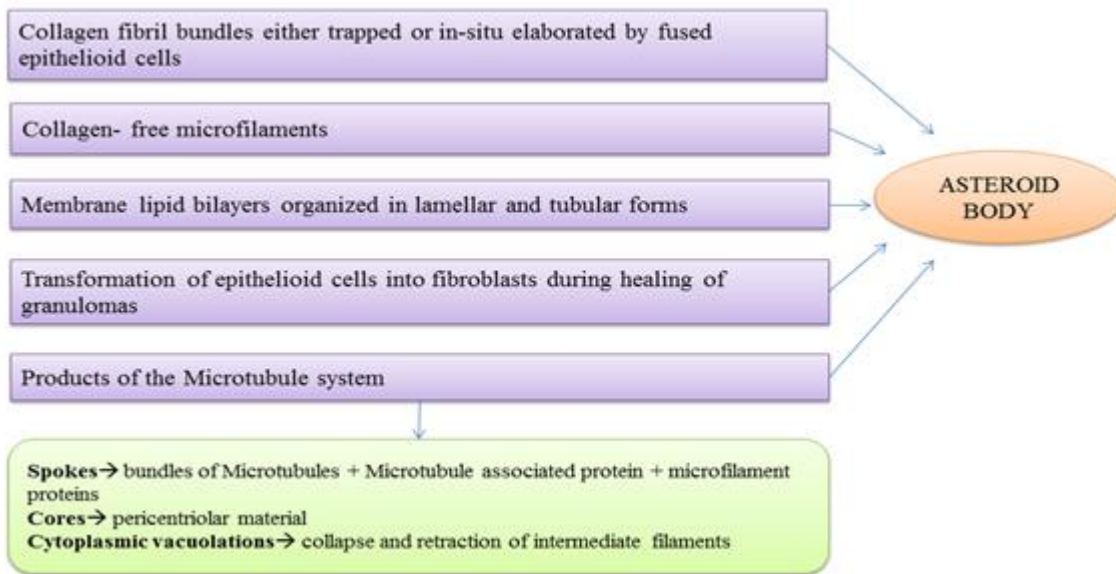
We encountered an unusual presentation of asteroid body in an inflamed keratocystic odontogenic tumor (KCOT) first of its kind to our knowledge. (Figure 1 A, B & C).



**Figure 1 A:** Arrow indicates asteroid body in an inflamed KCOT (H&E, 10x) **B:** Asteroid body (H&E, 40x) **C:** Schematic illustration of asteroid body.

Varied controversial concepts have been proposed based on the origin of asteroid bodies.<sup>2,4-7</sup> (flow chart 1) Special stains employed to highlight asteroid bodies

(less than 2-9% of cases)<sup>10</sup>, and in a single case of foreign body reaction to amalgam.<sup>11</sup> Presence of asteroid bodies being rare in oral diseases,



Flow chart 1- Depicting the concepts proposed based on the origin of asteroid bodies

are namely: alcian blue, colloidal iron and osmium tetroxide confirming acidic lipids.<sup>8</sup> The antigenic profile of asteroid body have shown discrepant results (Table 1) Pathological conditions in which ABs can be sighted

is an enigma in KCOT. Although the concepts on origin & composition are inconclusive, asteroid bodies are a visual delight & navigate pathologists imparting diagnostic clues. Further studies to ascertain the nature of these bodies are required.

Antigen profile	Method of detection	Results
Collagen Type I, III & IV	Immunohistochemistry (IHC)	-ve
Vimentin	Immunofluorescence	+ ve
	immunoperoxidase stains	-ve
	IHC	-ve
Alfa tubulin	IHC	-ve + ve
Beta tubulin	IHC	+ ve

are: Granulomatous diatheses including idiopathic granulomatous diseases (sarcoidosis, tuberculosis, leprosy, necrobiotic xanthogranuloma with paraproteinemia, and annular elastolytic granuloma), infections (mycobacterial, fungal eg. aspergillosis, sporotrichosis, parasitic), foreign body giant cell reactions, and tumors (cystic teratoma, fibrocystic mastopathy, and fibroxanthosarcoma).<sup>9</sup> In oral lesions, ABs are encountered in oral sarcoidosis

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