

Myth of the Mesoderm

I would like to clarify a misconception about the origin and content of dermoid vs epidermoid cysts. Reference was made to this in the article "Temporoparietal Dermoid Cysts with Intracranial Extension" by Currarino and Rutledge [1]. Although these authors' findings of dermoid cyst with sinus in an unexpected location are certainly of interest, I must differ with the statement that inclusion of ectodermal and mesodermal elements constitutes a dermoid cyst. This same concept has been repeated in other radiologic reports and major neuroradiologic textbooks [2–5]. The misconception common to these writings is that hair and sebaceous and sweat glands are of mesodermal origin. Although these elements lie within mesodermal connective tissue, the origin of hair follicles and these glandular structures is the ectoderm [6–8]. The embryologic and pathologic literature appears to have no debate about the theories of origin of epidermoid and dermoid cysts from dermis [9–11]. Inclusion of small amounts of mesodermal or endodermal elements in a tumor composed primarily of tissue of ectodermal origin results in its classification as a teratoid tumor rather than a teratoma, in which larger volumes of these additional elements are present [12].

This issue is raised to avoid misinterpretation for the explanation of variations in signal intensity between epidermoid and dermoid cysts by MR. Although increased signal intensity has been seen on T1-weighted images in dermoid and, occasionally, epidermoid cysts, this does not imply the presence of mesodermal fat as contained in lipomas [13]. Desquamated debris of squamous epithelial cells, which contains cholesterol and keratin, is common to both epidermoid and dermoid cysts. In dermoid cysts, the additional breakdown products of hair combined with the secretions of sweat and sebaceous glands result in an oily mixture containing lipid metabolites [12], more fluid than that seen in epidermoid cysts [13]. The calcifications that can be seen in association with a dermoid cyst does not change the classification of this entity as an ectodermal derivation. These calcifications may be dystrophic or a result of dental enamel, another ectodermal derivative [9].

Clarification of the "myth of the mesoderm" of dermoid cyst origin not only is of academic interest but also emphasizes a need to look outside the radiologic literature when making statements about non-radiologic fields, such as embryology and pathology.

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Reply

We too believe, as does Dr. Smith, that dermoid cysts are ectodermal in origin, but we erroneously chose to follow the concept as established in print. We are grateful that Dr. Smith has clarified the origin of the dermoid cyst for all of us.

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