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Novel pneumatic features in the ribs of the sauropod dinosaur *Brachiosaurus altithorax*

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Pneumatic dorsal ribs are known for many sauropods, but to date costal pneumaticity has received relatively little attention. In particular, the pneumatic ribs of the holotype specimen of *Brachiosaurus altithorax* have been largely overlooked, although they present a unique configuration of pneumatic features. One rib, with a pneumatic foramen some distance down the shaft, was briefly described and illustrated in the early 20th century by Elmer S. Riggs. A second rib with a pneumatic foramen in the tuberculum of the rib has not previously been described or illustrated. This previously undescribed foramen is similar in location to those in some dorsal ribs of *Brontosaurus excelsus* and *Giraffatitan brancai*, but differs from them in both size and shape. The contrasting sites of costal pneumaticity in the holotype individual of *Brachiosaurus altithorax* emphasize the generally opportunistic mode of postcranial pneumatization, in both sauropods and other ornithodirans, but conform to models of pneumatization following vascularization.

Key words: Sauropoda, Dinosauria, Brachiosauridae, pneumaticity, costal pneumaticity.

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