Ultrastructure of Human Spinal Trabecular Arachnoid

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The arachnoid trabecular layer, located internally to the arachnoid layer, is composed of fibers that form the spider web–like trabecular structure found in the subarachnoid space and in the adventitial layer of blood vessels [1–6]. The arachnoid trabeculae give shape to tubular structures (arachnoid sheaths) for each nerve root and for the spinal cord. Some of these arachnoid trabeculae extend to the pia mater [1–3]. The trabecular arachnoid is an extremely fragile structure, which can easily be damaged. Because of its fragility, this membrane may be destroyed during dissection and manipulation, so that it is not frequently seen or systematically described [7]. Trabecular arachnoid limits nerve root movement to a certain extent, holding each root in its position within the dural sac and in relation to other nerve roots (Figs. 24.1, 24.2, 24.3, 24.4, 24.5, 24.6, 24.7, 24.8, 24.9, 24.10, 24.11, 24.12, 24.13, 24.14, 24.15, 24.16, 24.17, 24.18, 24.19, 24.20, 24.21, 24.22, 24.23, 24.24, 24.25, and 24.26) [4–6].

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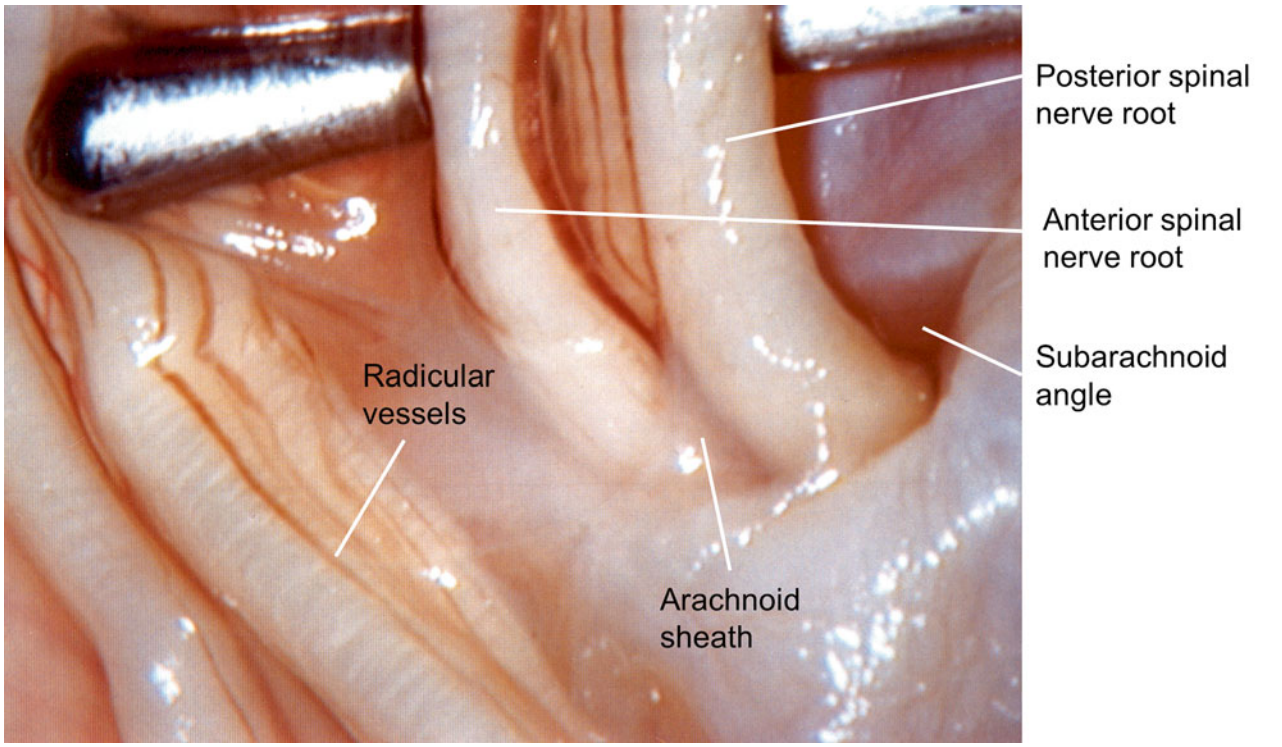

Fig. 24.1 Trabecular arachnoid. Detail of anterior and posterior spinal nerve root and its arachnoid sheath (From Reina et al. [3]; with permission)

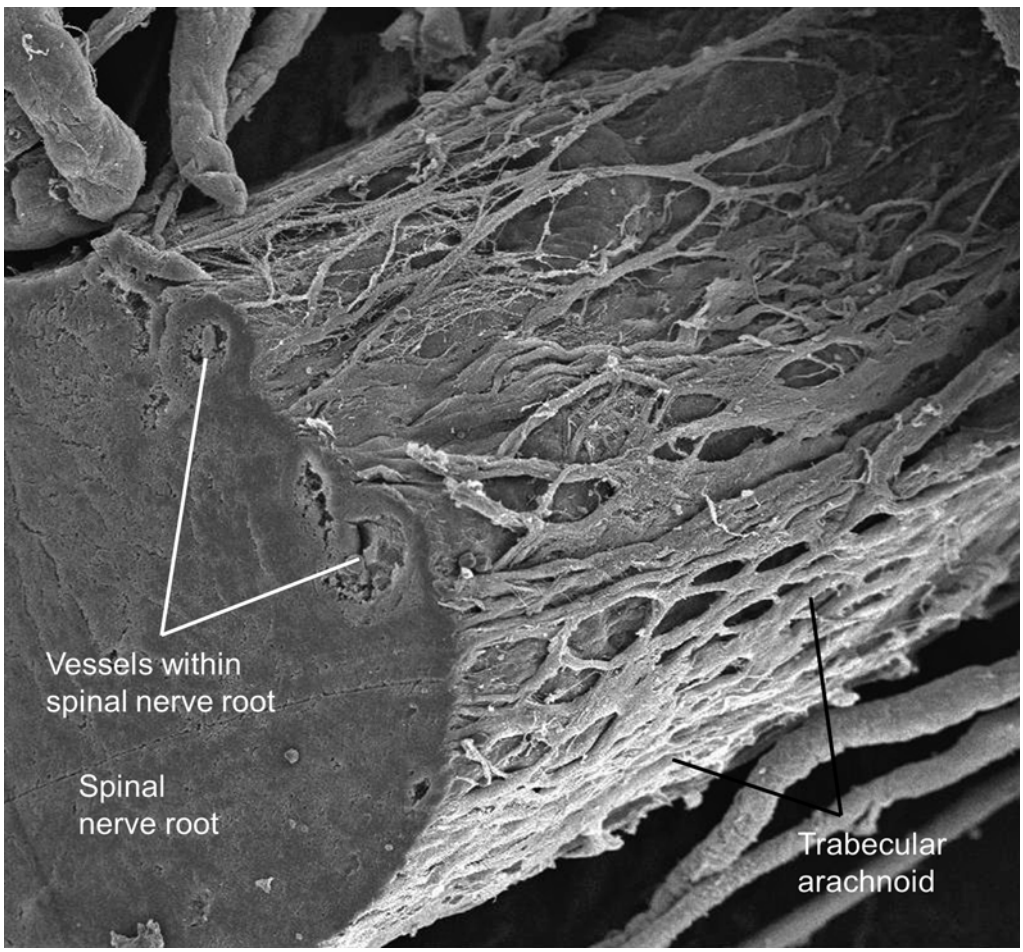

Fig. 24.2 Trabecular arachnoid. Detail of trabecular arachnoid around spinal nerve root. Scanning electron microscopy. Magnification × 120

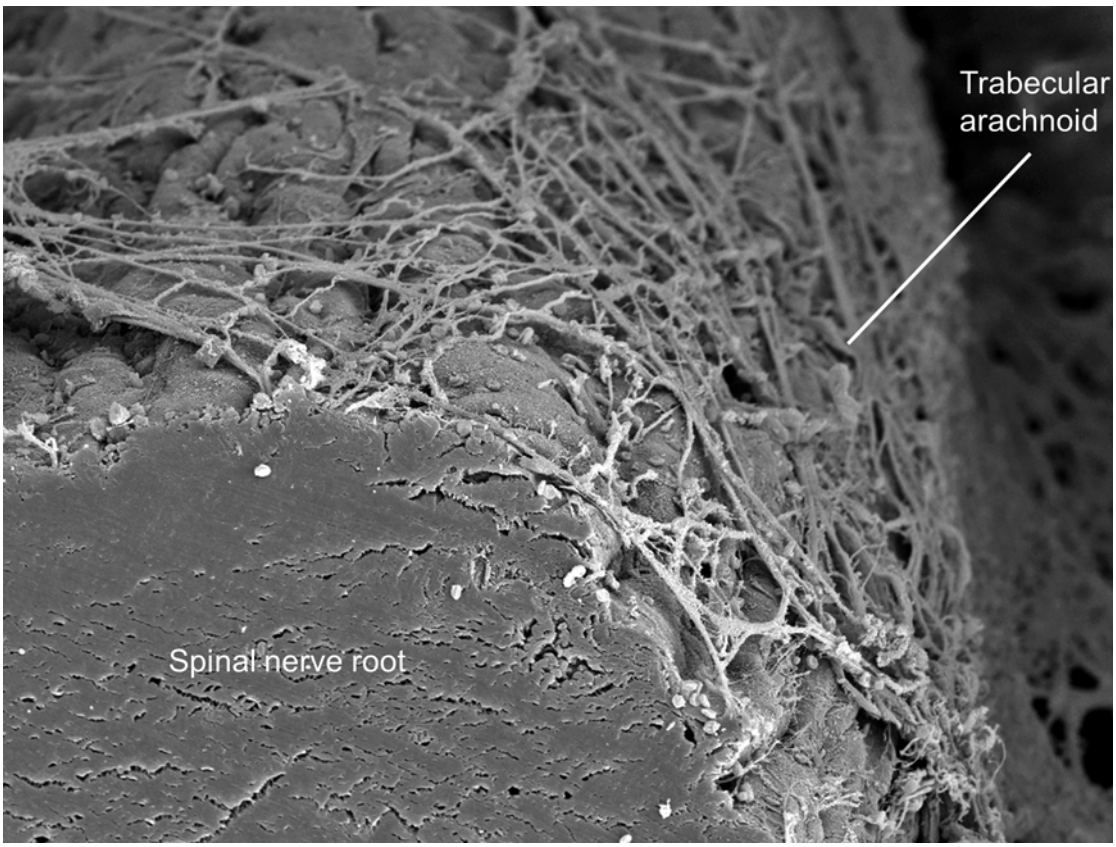

Fig. 24.3 Trabecular arachnoid. Detail of trabecular arachnoid around spinal nerve root. Scanning electron microscopy. Magnification × 250

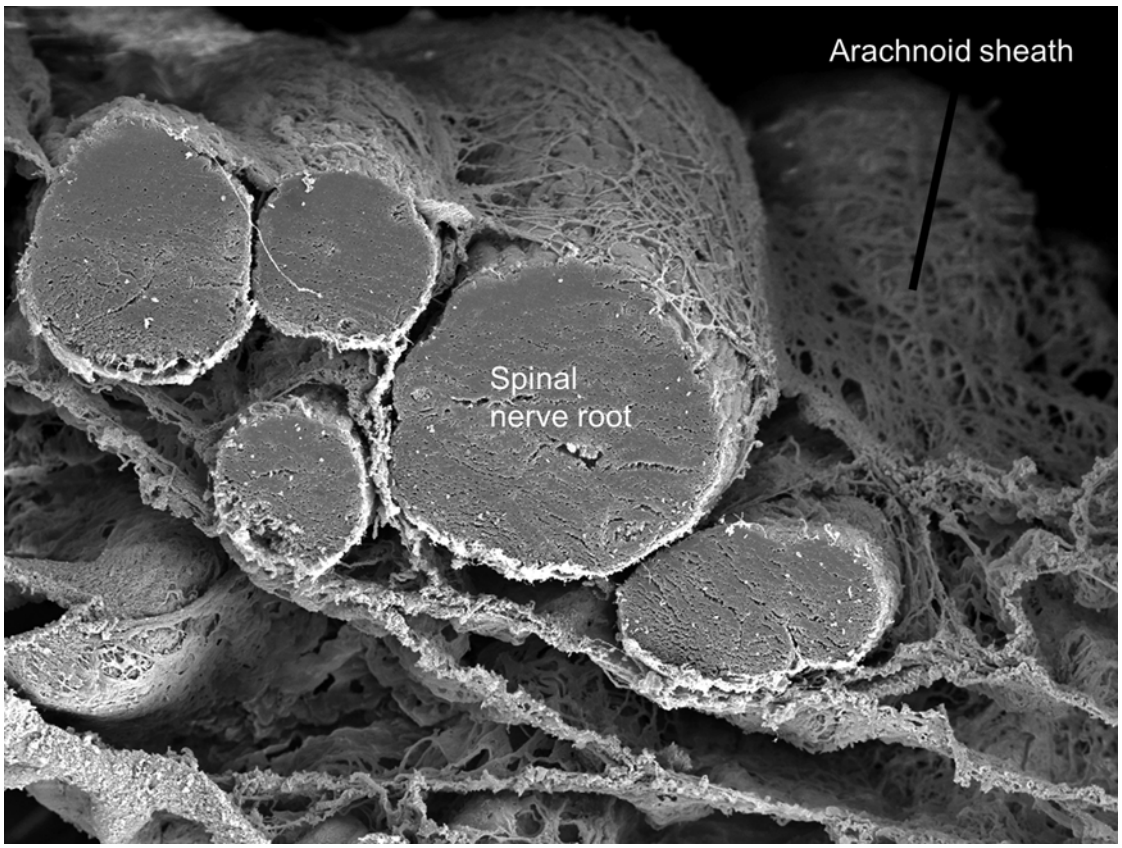

Fig. 24.4 Trabecular arachnoid. Detail of five spinal nerve roots enveloped by arachnoid sheath. Scanning electron microscopy. Magnification × 75

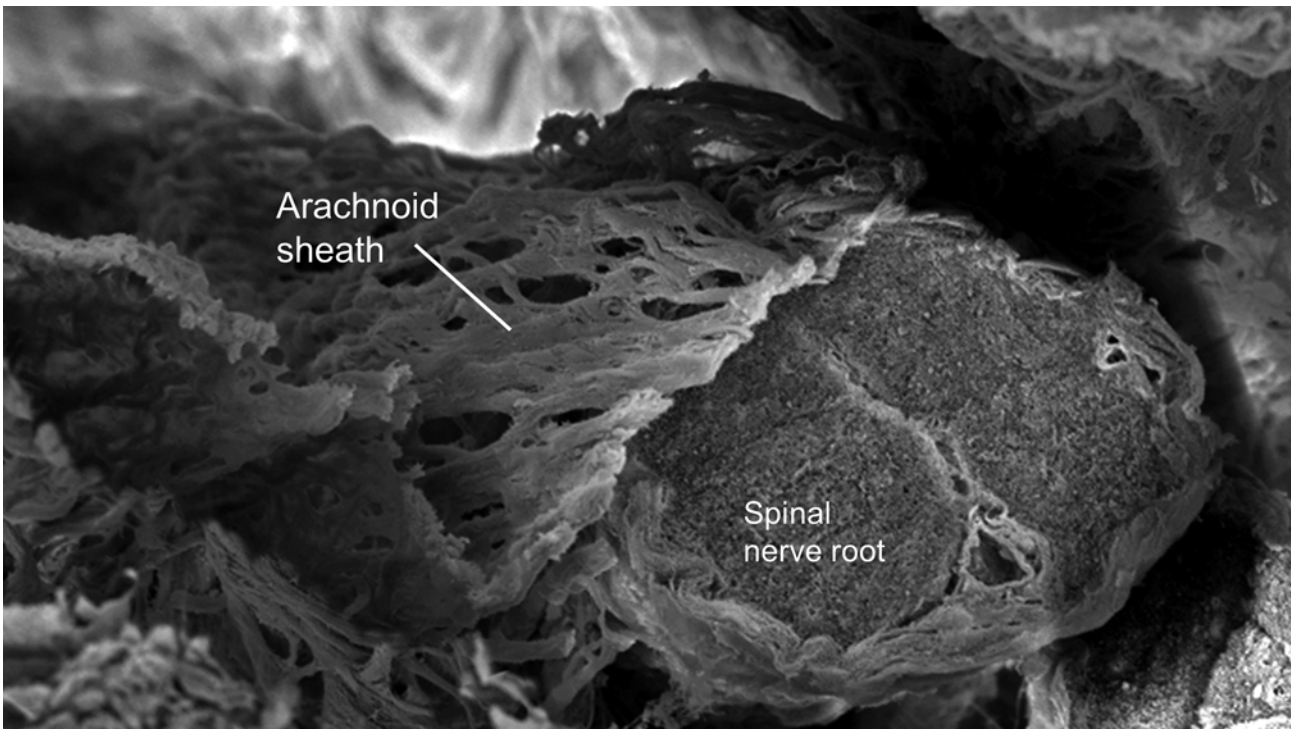

Fig. 24.5 Trabecular arachnoid. Detail of spinal nerve root and arachnoid sheath. Scanning electron microscopy. Magnification × 80

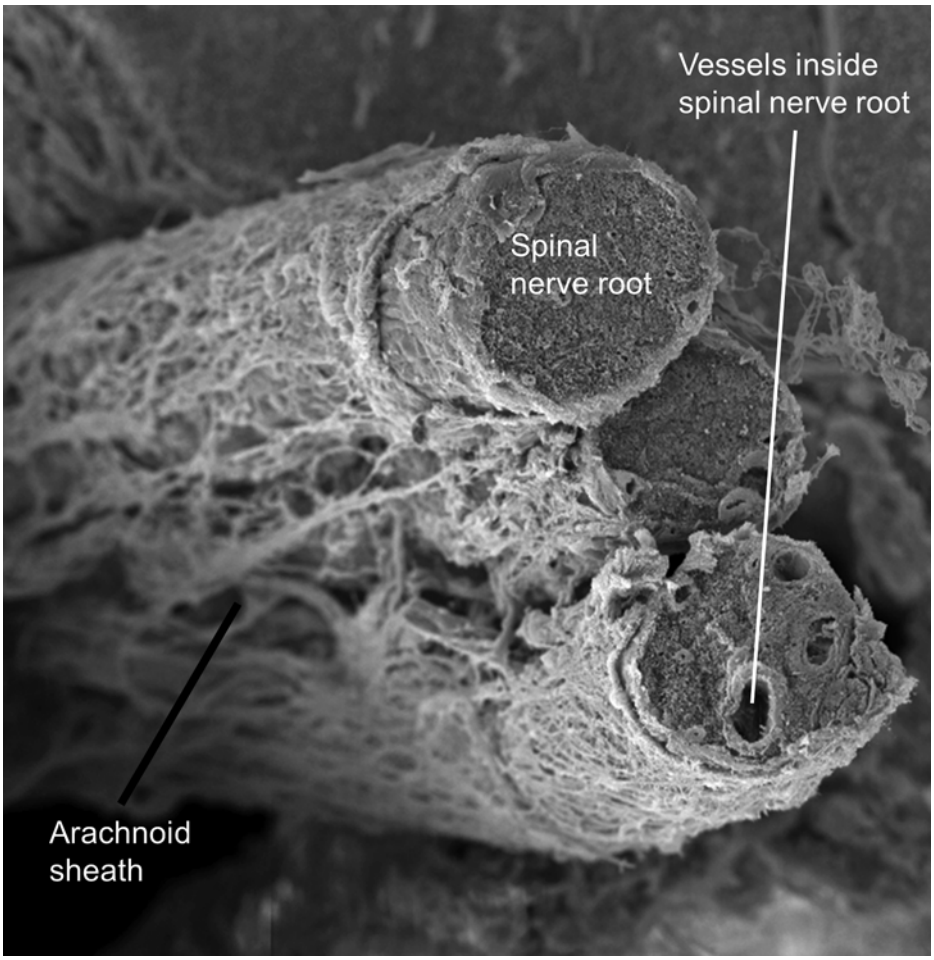

Fig. 24.6 Trabecular arachnoid. Details of three spinal nerve roots with arachnoid sheaths. Scanning electron microscopy. Magnification × 50

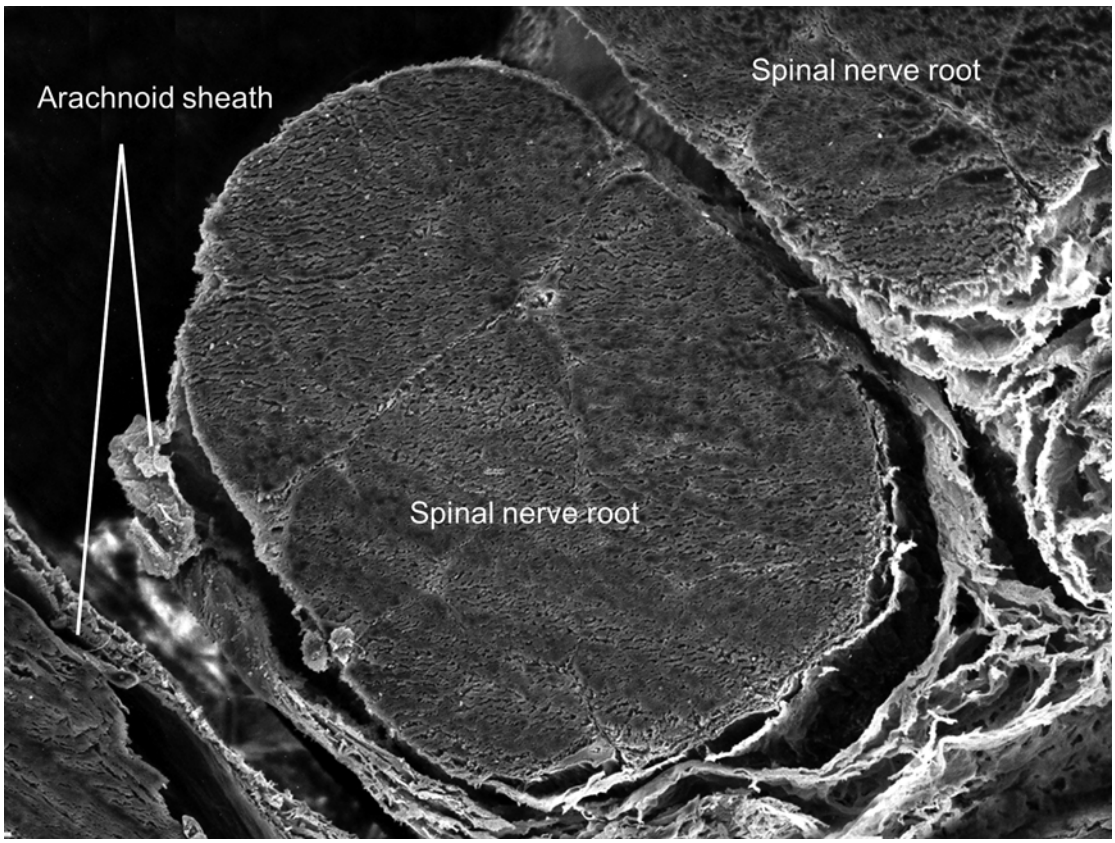

Fig. 24.7 Trabecular arachnoid. Detail of spinal nerve roots and their arachnoid sheaths. Scanning electron microscopy. Magnification × 60 (From Reina et al. [3]; with permission)

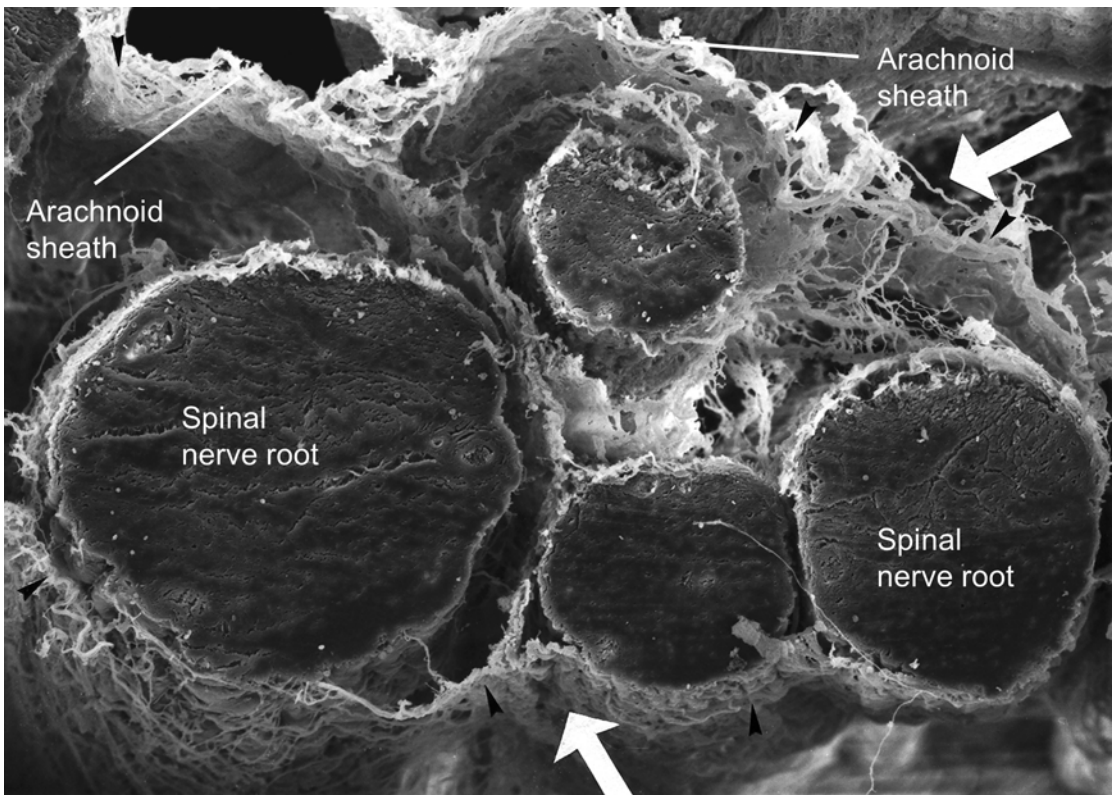

Fig. 24.8 Trabecular arachnoid. Detail of four spinal nerve roots with their arachnoid sheaths. Scanning electron microscopy. Magnification × 100 (From Reina et al. [1]; with permission)

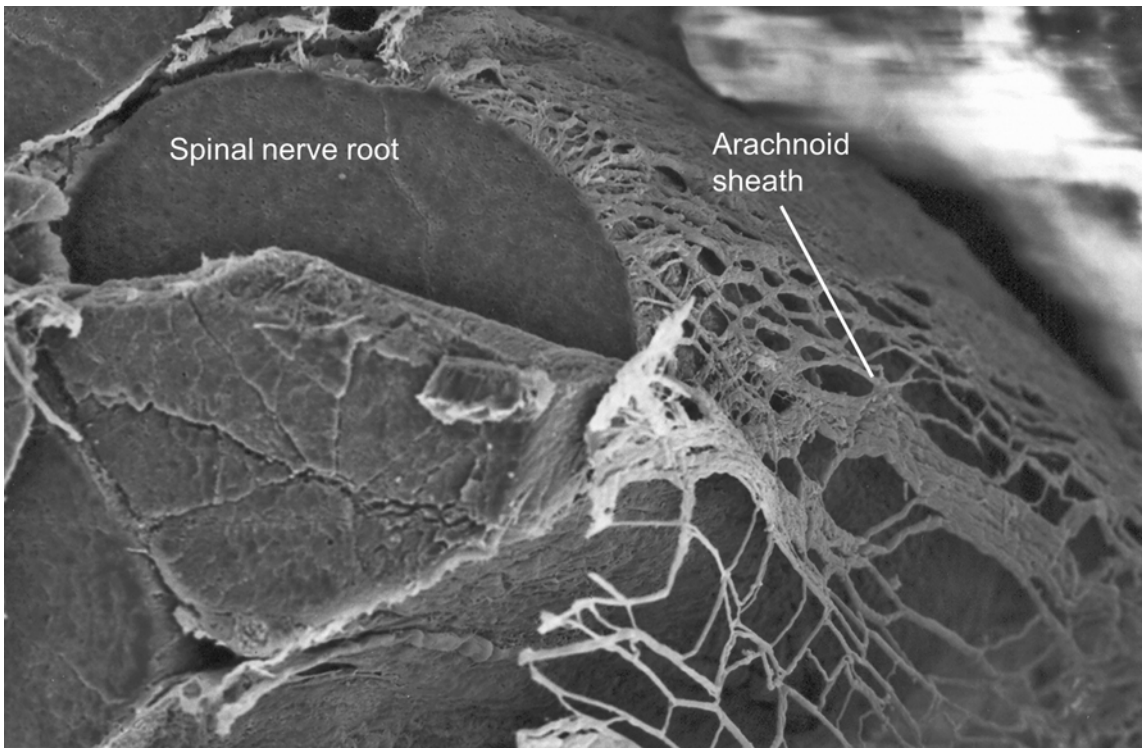

Fig. 24.9 Trabecular arachnoid. Detail of an arachnoid sheath. Scanning electron microscopy. Magnification×80 (From Reina et al. [6]; with permission)

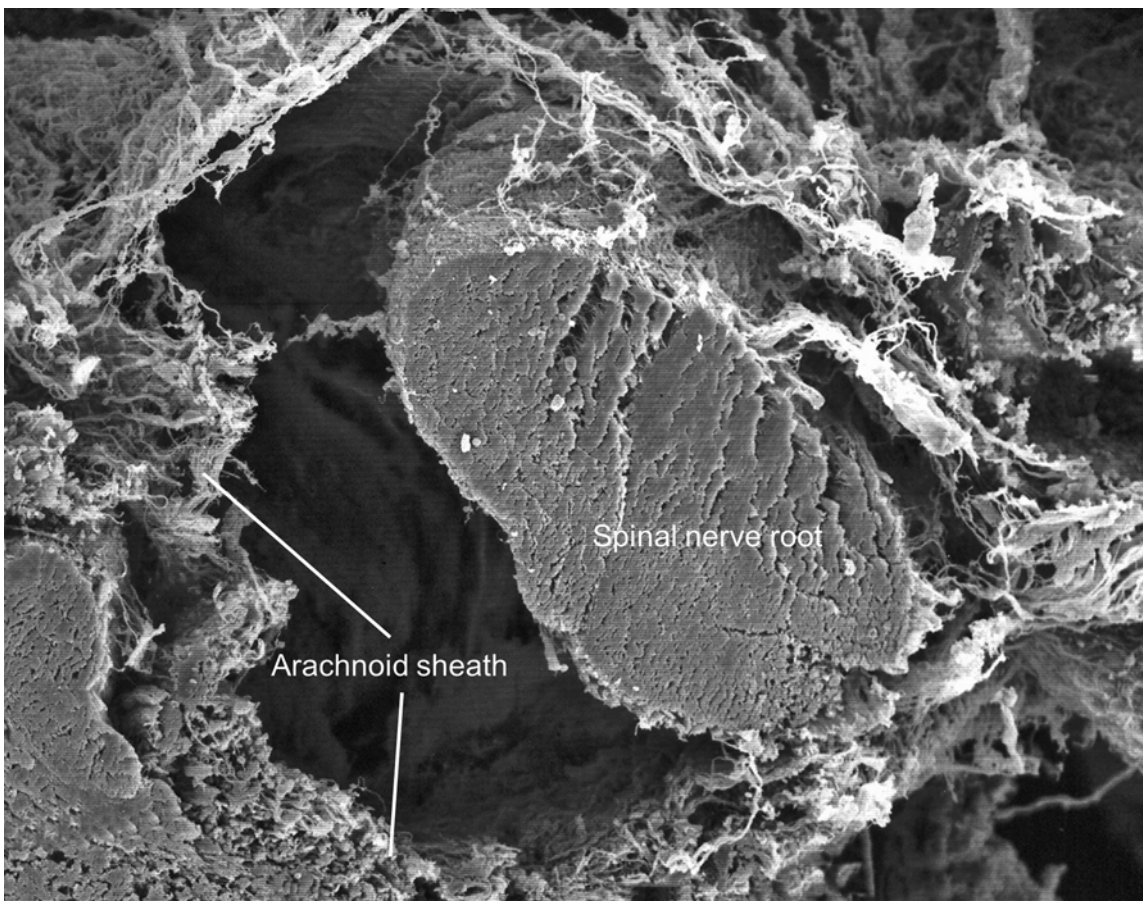

Fig. 24.10 Trabecular arachnoid. Detail of a spinal nerve root with its arachnoid sheath. Scanning electron microscopy. Magnification×100 (From Reina et al. [3]; with permission)

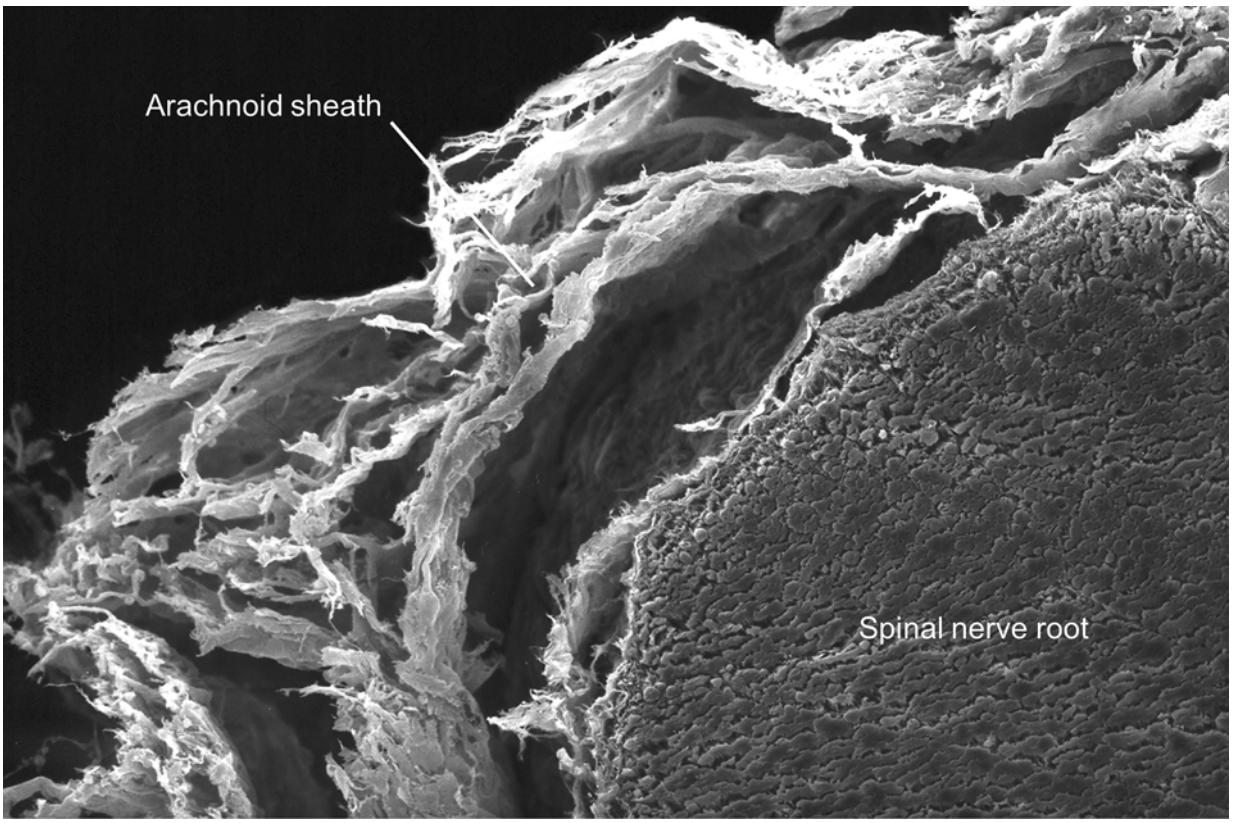

Fig. 24.11 Trabecular arachnoid. Detail of an arachnoid sheath. Scanning electron microscopy. Magnification × 150 (From Reina et al. [1]; with permission)

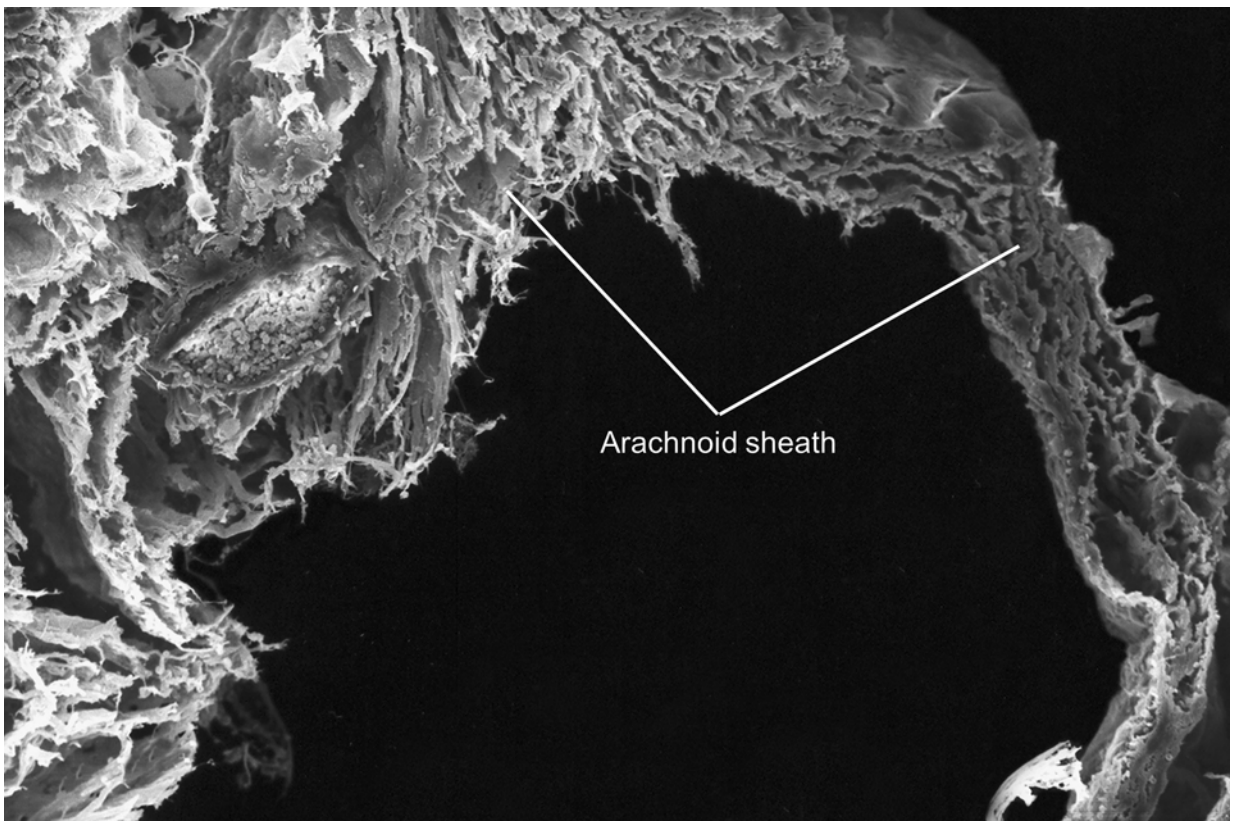

Fig. 24.12 Trabecular arachnoid. Detail of an arachnoid sheath without spinal nerve root. Scanning electron microscopy. Magnification × 100 (From Reina et al. [6]; with permission)

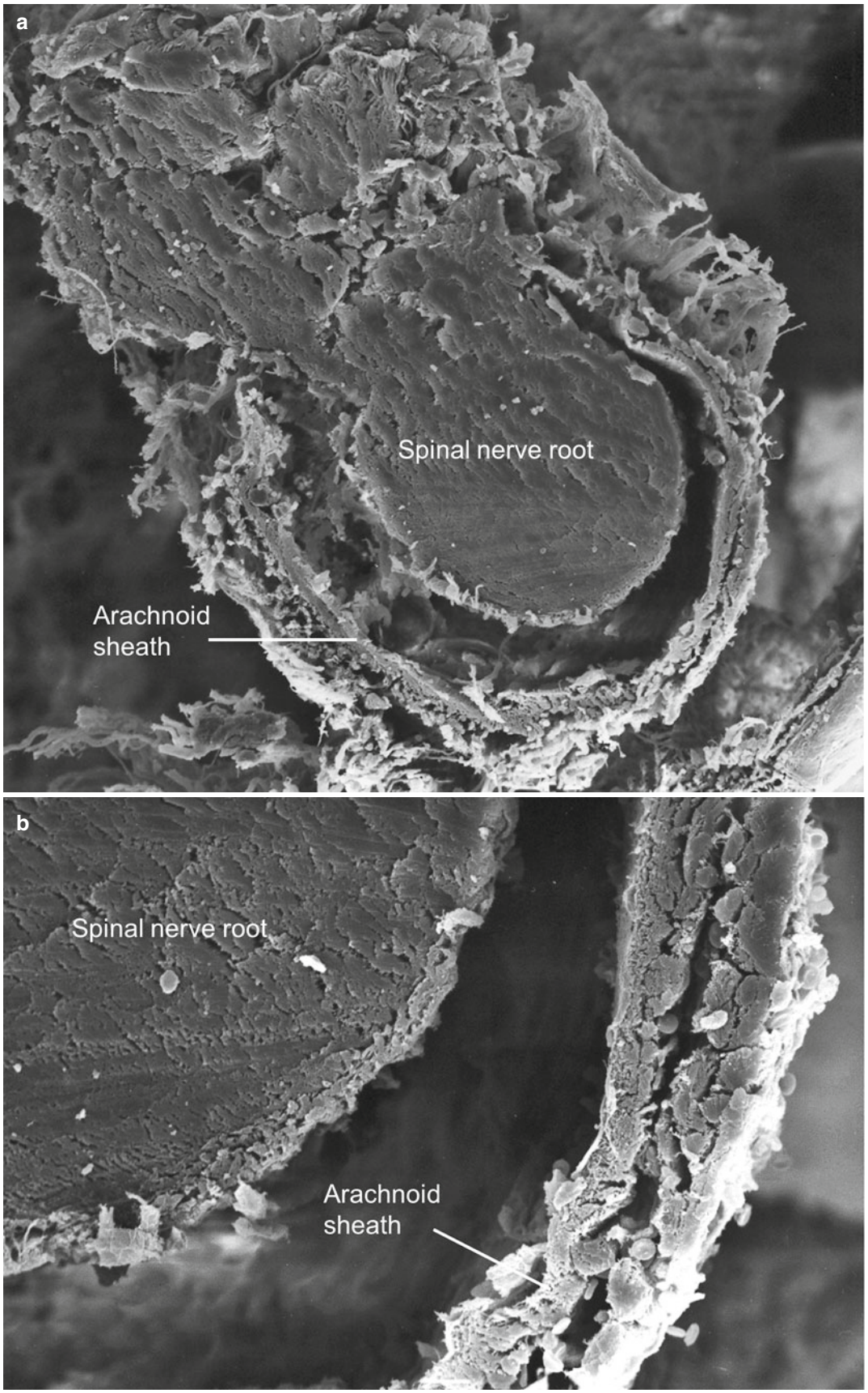

Fig. 24.13 Trabecular arachnoid. (**a**) Detail of an arachnoid sheath (magnification × 100). (**b**) Detail of (**a**) at higher magnification (×400). Scanning electron microscopy (**a** from Reina et al. [1], **b** from Reina et al. [4]; both with permission)

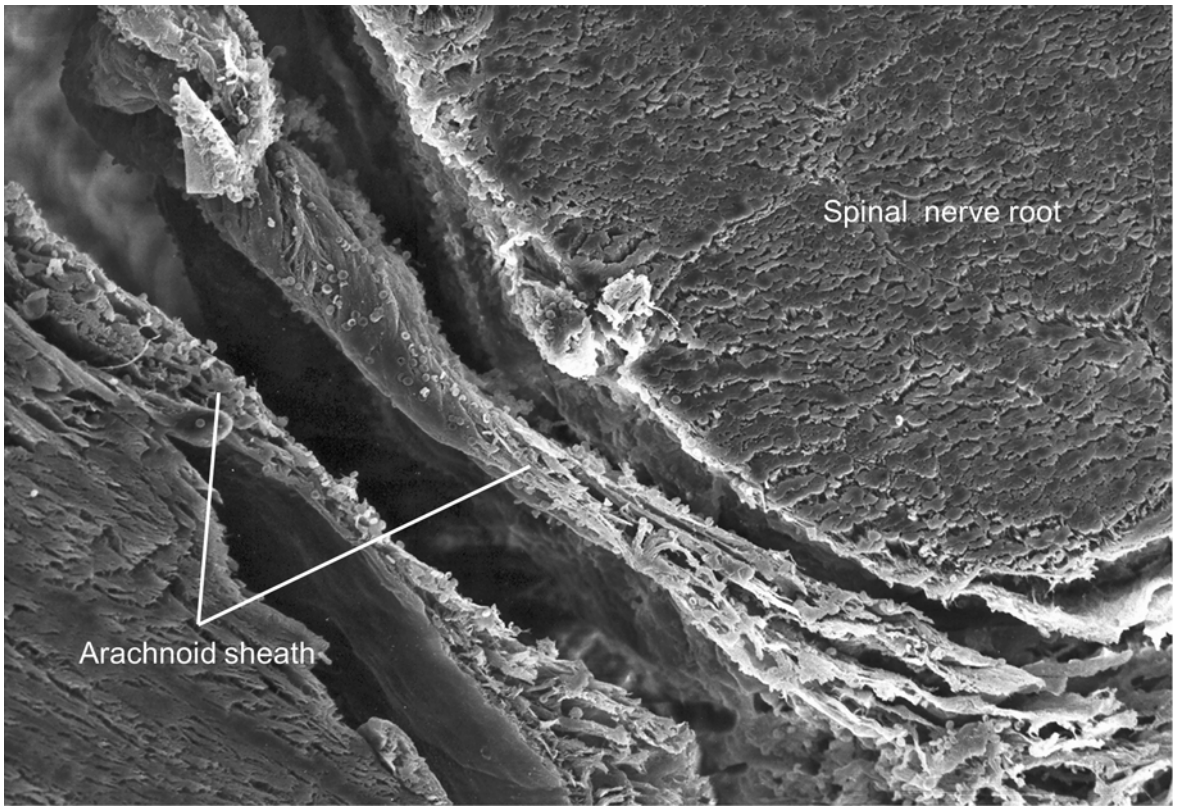

Fig. 24.14 Trabecular arachnoid. Detail of an arachnoid sheath. Scanning electron microscopy. Magnification × 150 (From Reina et al. [6]; with permission)

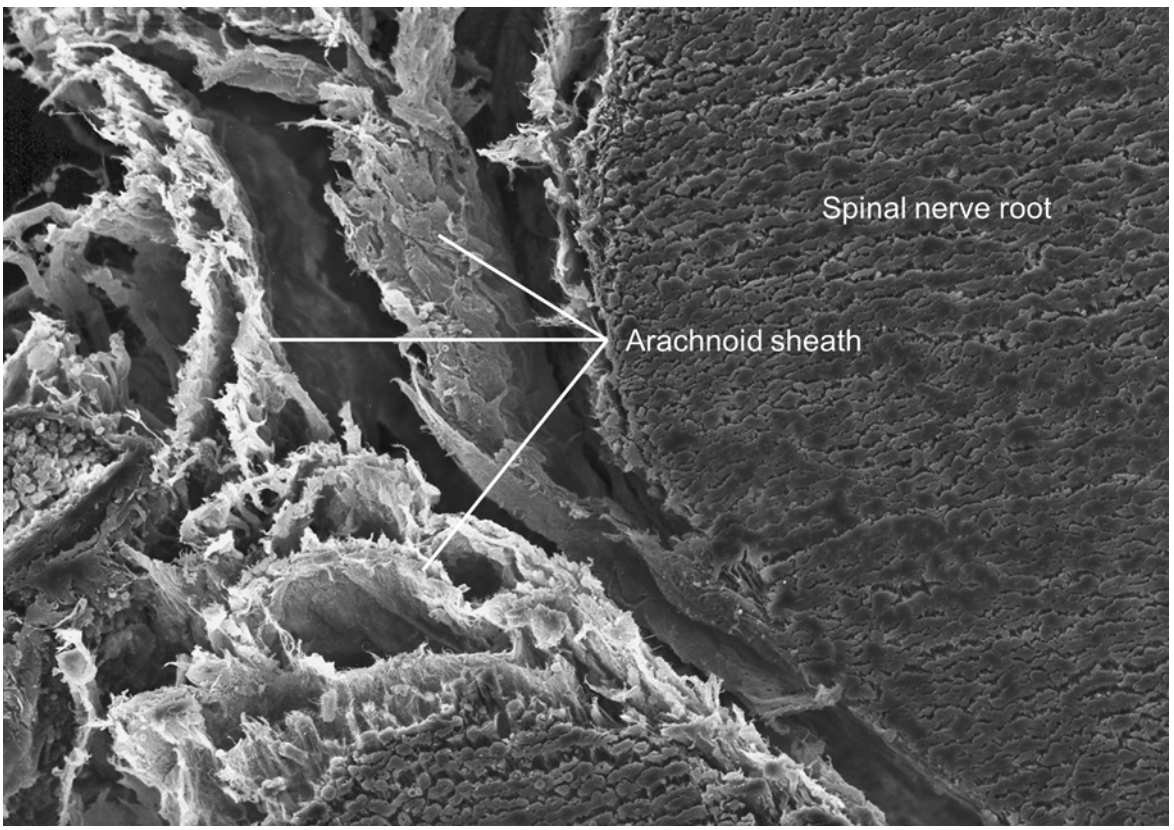

Fig. 24.15 Trabecular arachnoid. Detail of an arachnoid sheath. Scanning electron microscopy. Magnification × 150 (From Reina et al. [6]; with permission)

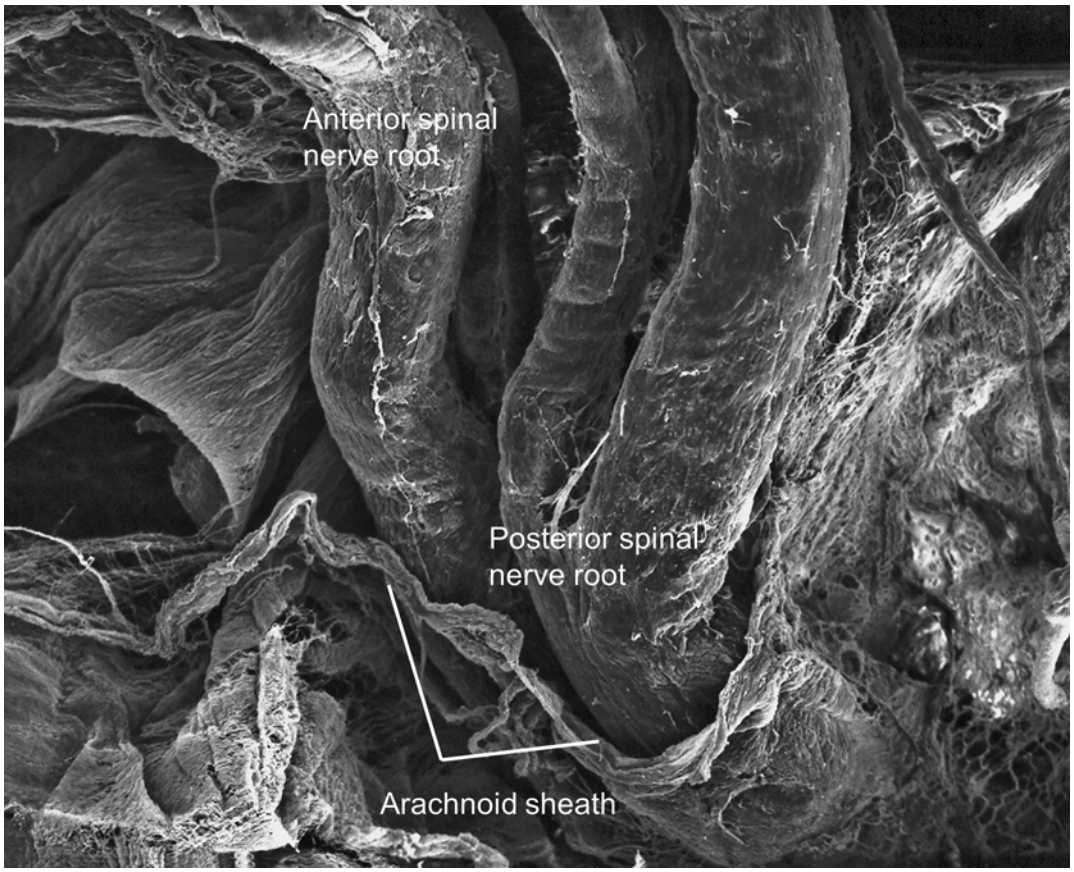

Fig. 24.16 Trabecular arachnoid. Detail of anterior and posterior spinal nerve root enclosed by its arachnoid sheath. Scanning electron microscopy. Magnification × 30 (From Reina et al. [1]; with permission)

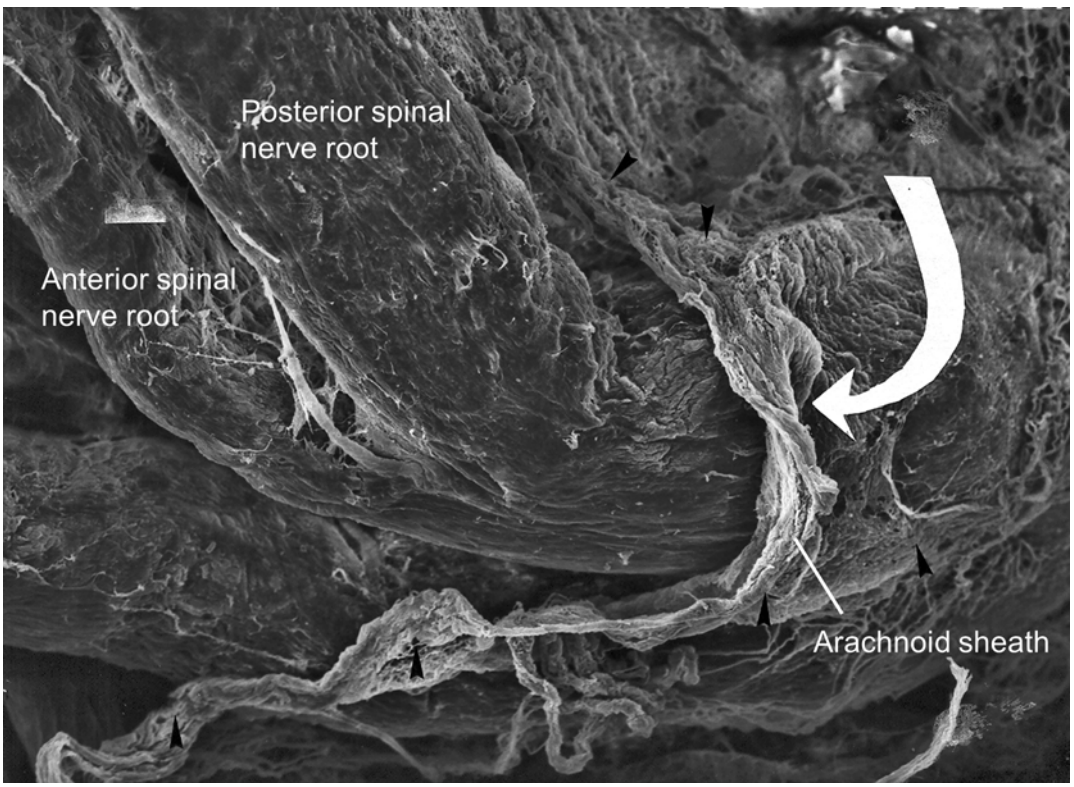

Fig. 24.17 Trabecular arachnoid. Detail of Fig. 24.16 at higher magnification (×55). Scanning electron microscopy (From Reina et al. [1]; with permission)

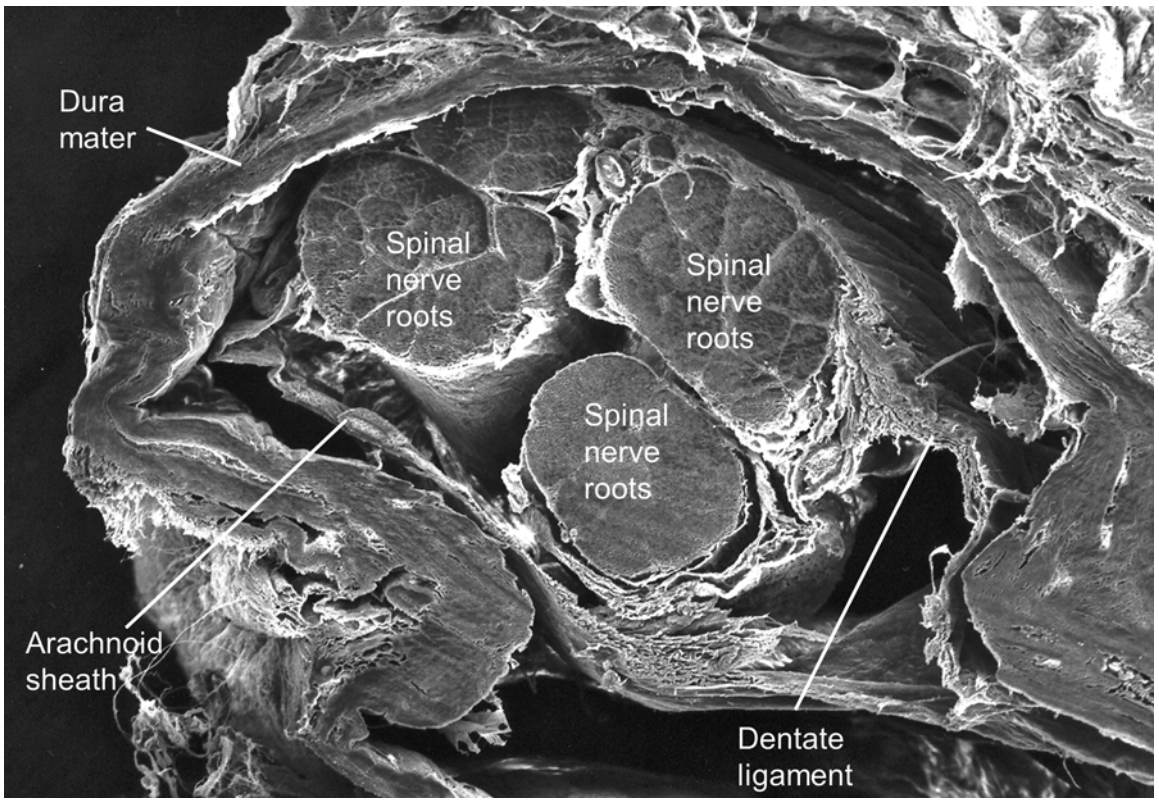

Fig. 24.18 Trabecular arachnoid. Detail of four spinal nerve roots with their arachnoid sheaths. Scanning electron microscopy. Magnification×20

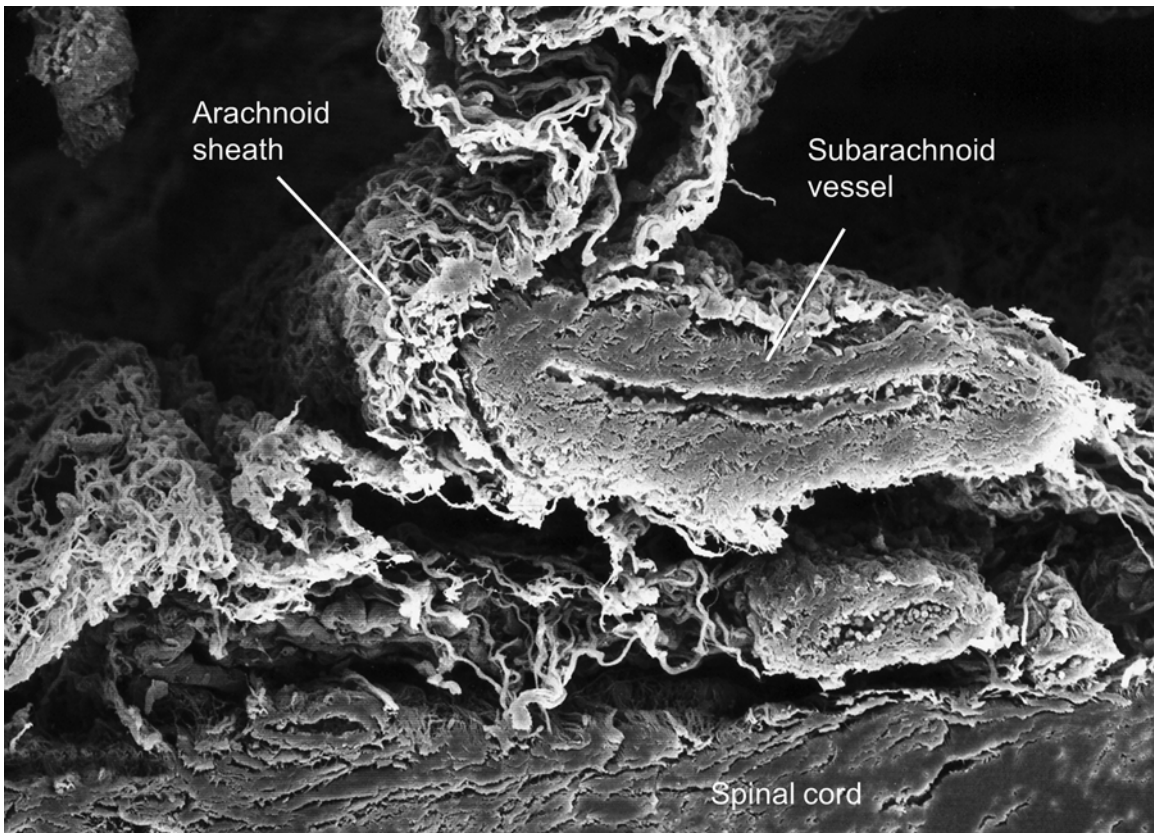

Fig. 24.19 Trabecular arachnoid. Vessel within subarachnoid space surrounded by arachnoid trabecular structure. Scanning electron microscopy. Magnification×120 (From Reina et al. [4]; with permission)

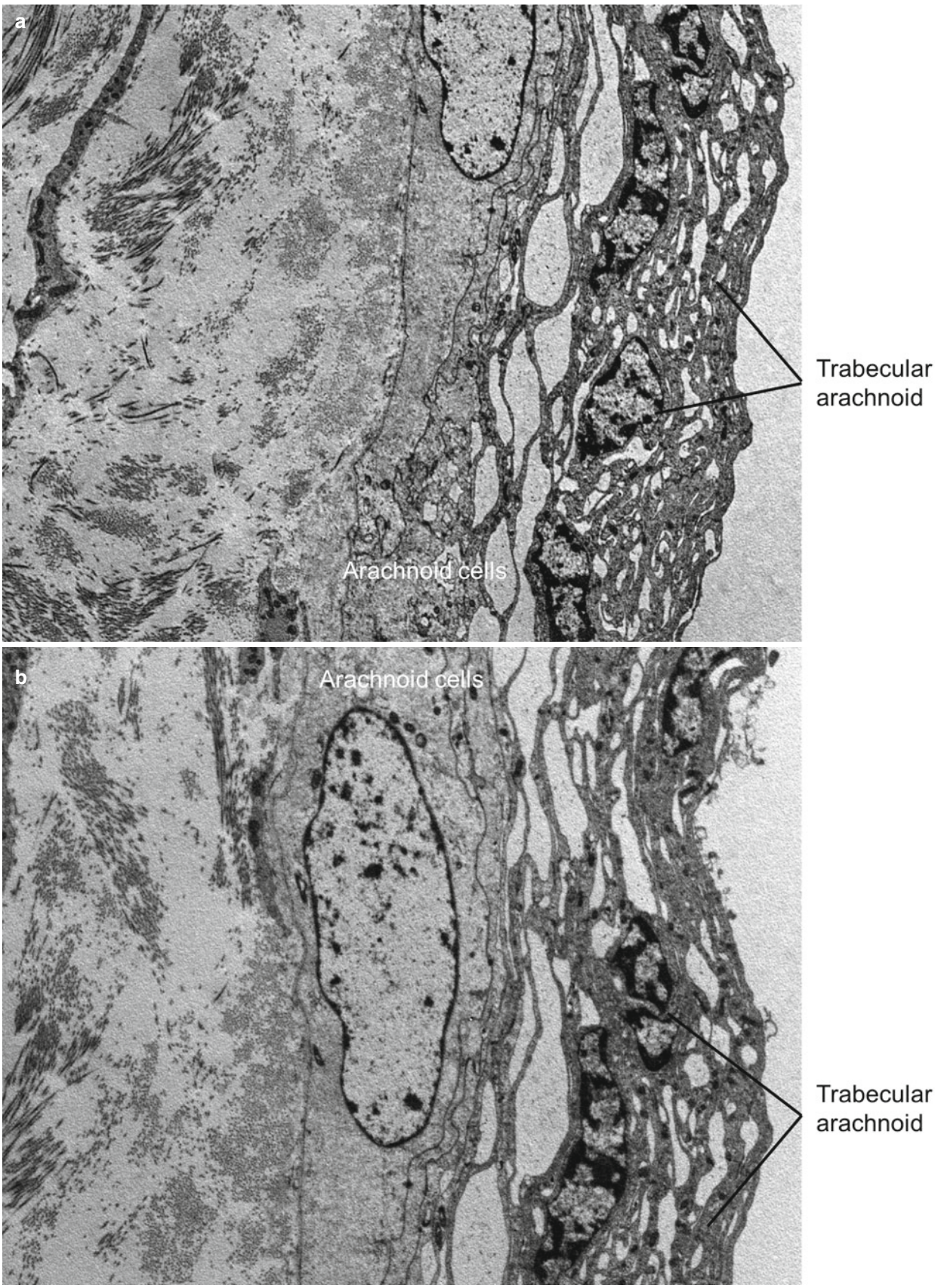

Fig. 24.20 Trabecular arachnoid. (**a**, **b**) Inner portion of trabecular arachnoid close to arachnoid layer. Transmission electron microscopy. Magnification: **a**, ×6,000; **b**, ×8,000

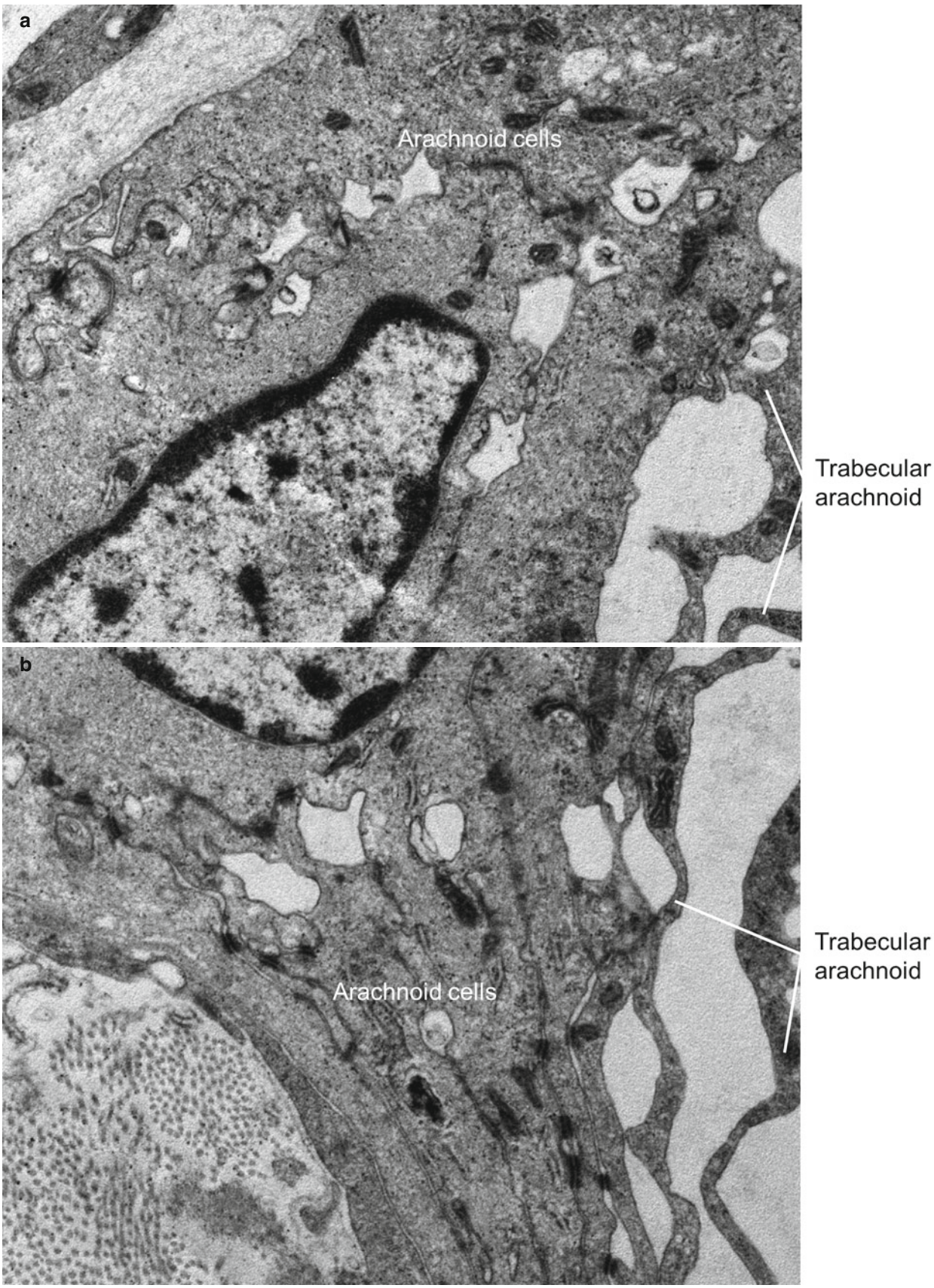

Fig. 24.21 Trabecular arachnoid. (**a**, **b**) Detail of inner portion of trabecular arachnoid close to arachnoid layer (magnification×25,000). Transmission electron microscopy

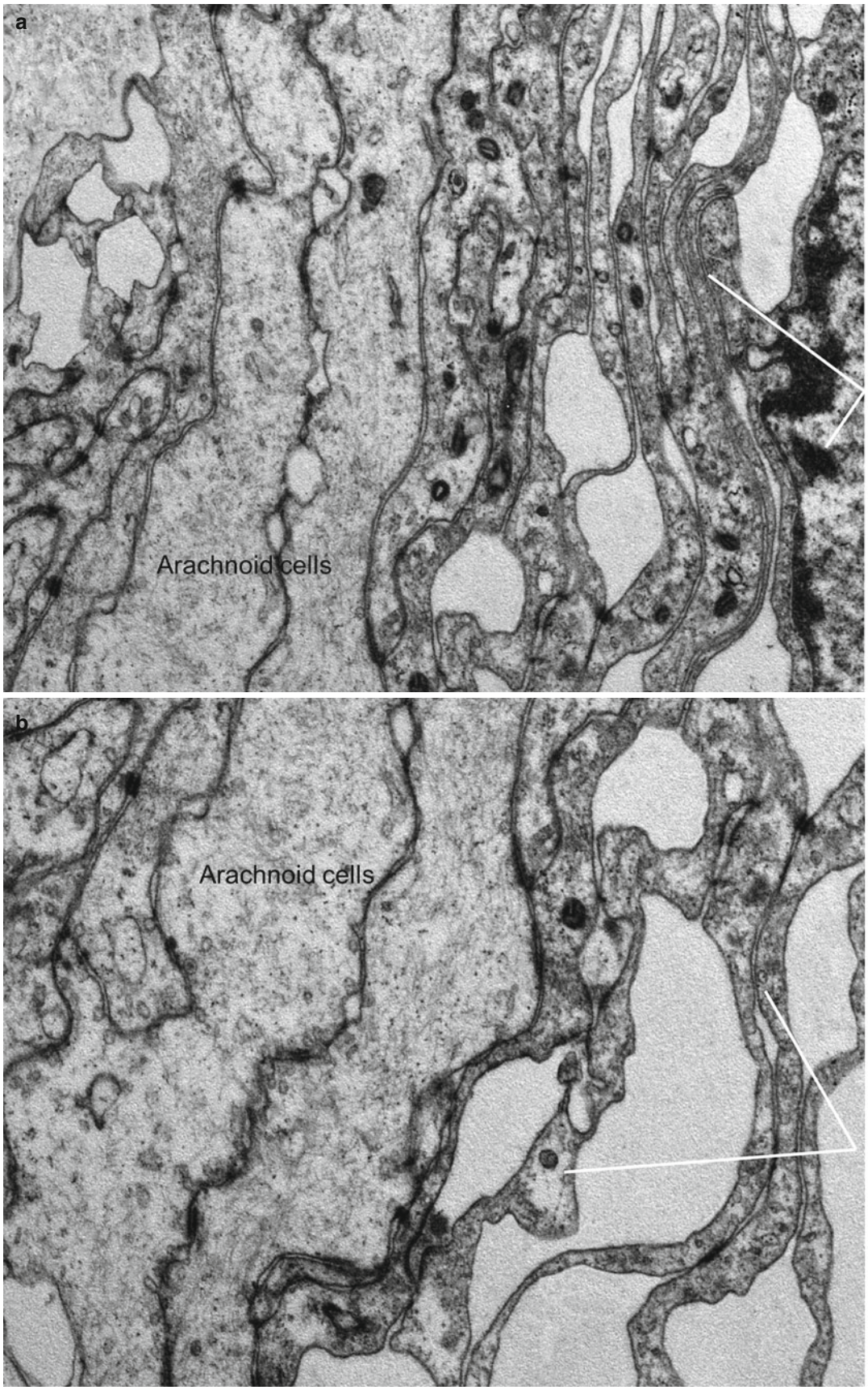

Fig. 24.22 Trabecular arachnoid. (**a**, **b**) Detail of inner portion of trabecular arachnoid close to arachnoid layer. Transmission electron microscopy. Magnification: **a**, ×25,000; **b**, ×30,000

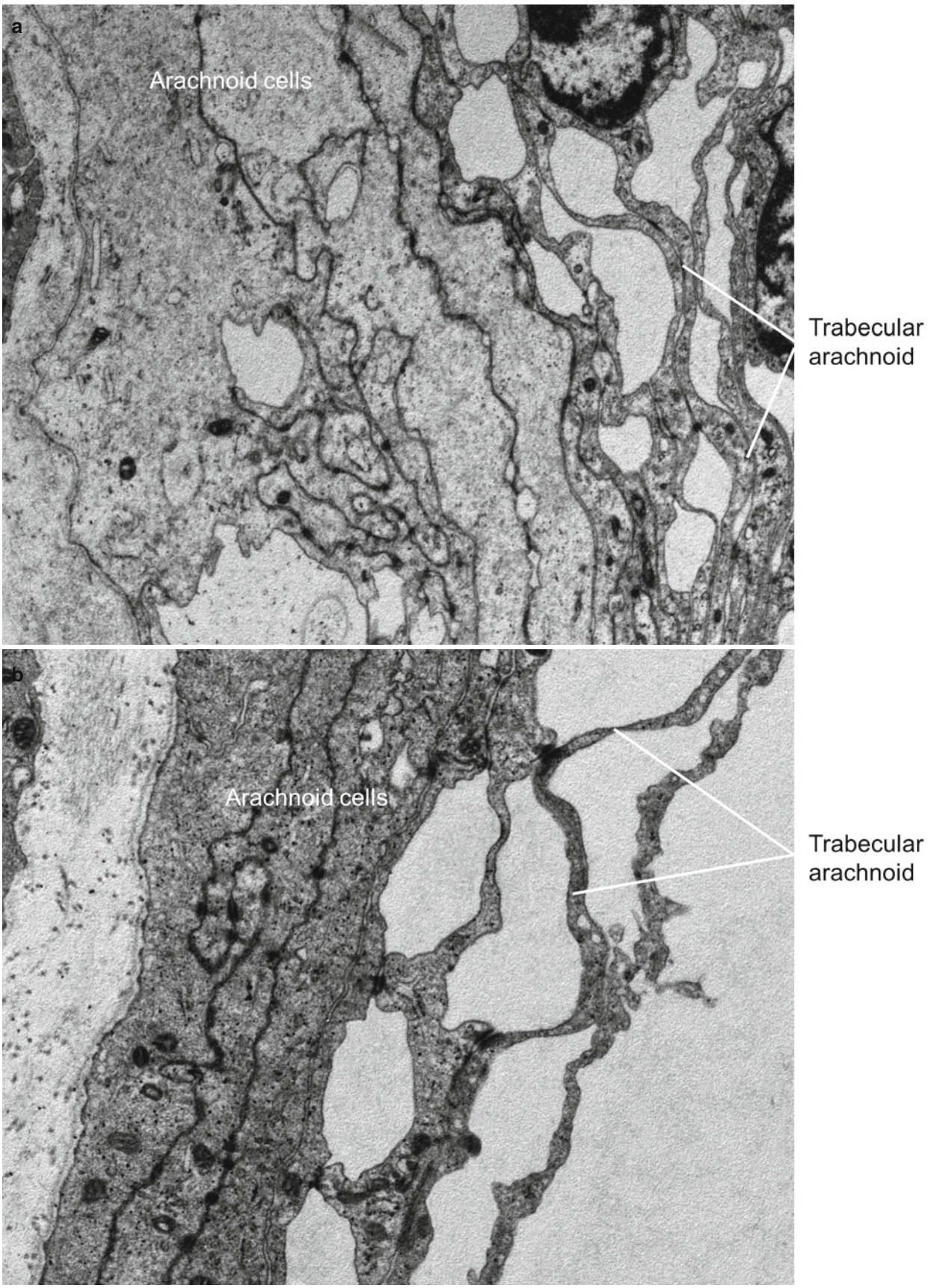

Fig. 24.23 Trabecular arachnoid. (**a**, **b**) Detail of inner portion of trabecular arachnoid close to arachnoid layer. Transmission electron microscopy. Magnification: **a**, ×15,000; **b**, ×25,000 (**b** from Reina et al. [7]; with permission)

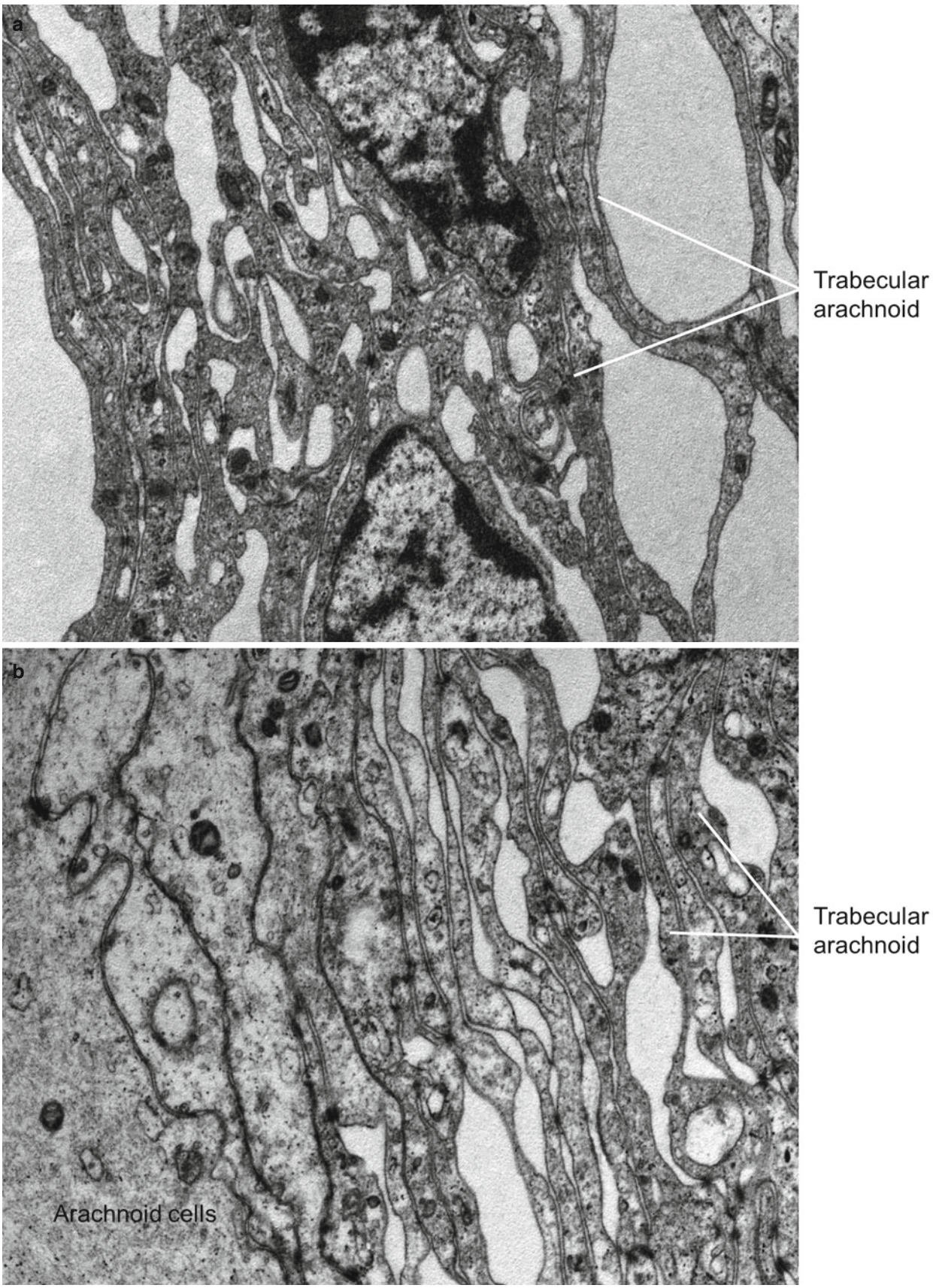

Fig. 24.24 Trabecular arachnoid. (**a**, **b**) Detail of inner portion of trabecular arachnoid close to arachnoid layer. Transmission electron microscopy. Magnification: **a**, ×20,000; **b**, ×25,000

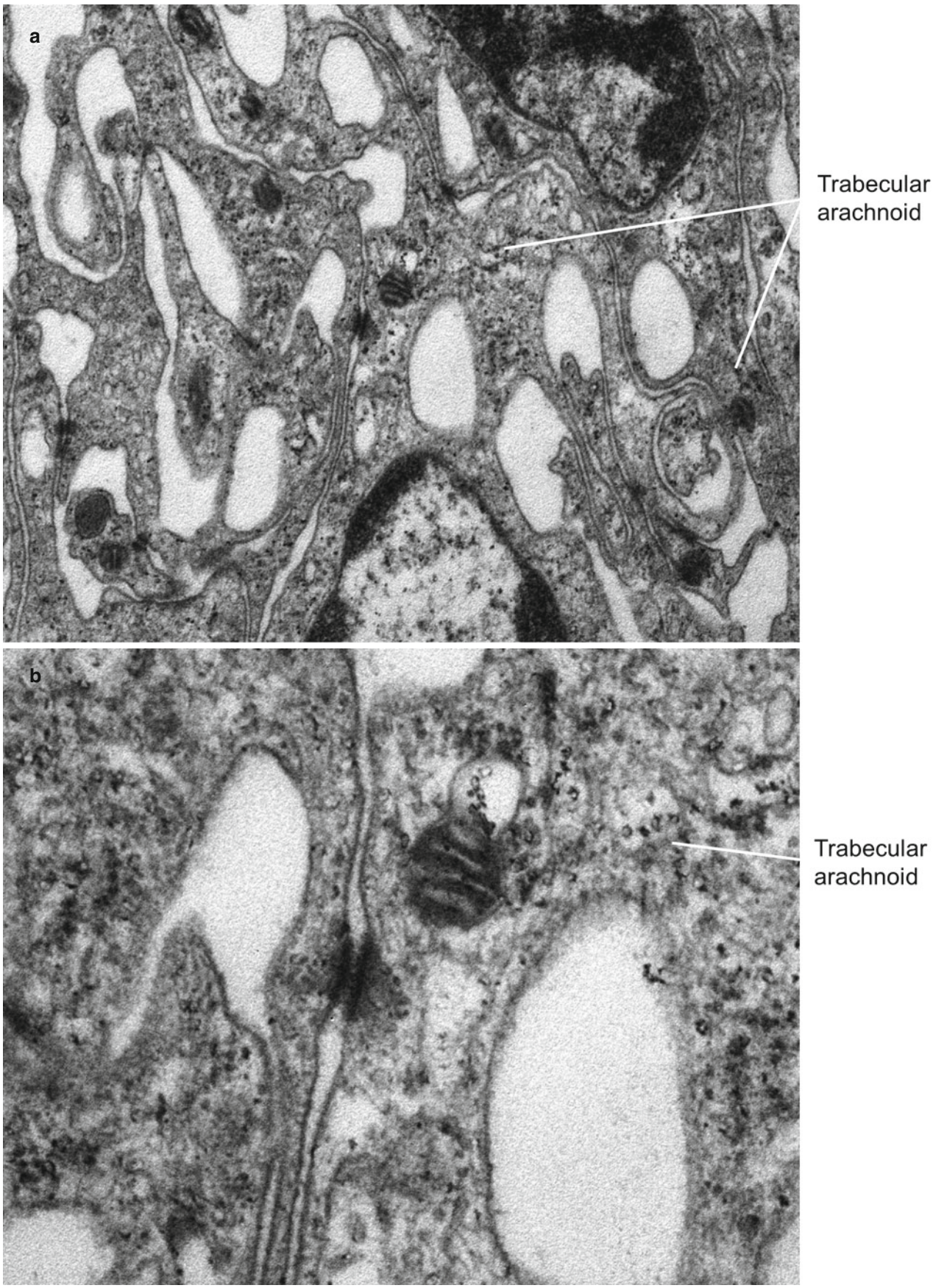

Fig. 24.25 Trabecular arachnoid. (**a**, **b**) Detail of trabecular arachnoid. Transmission electron microscopy. Magnification: **a**, ×40,000; **b**, ×120,000 (**a** from Reina et al. [7]; with permission)

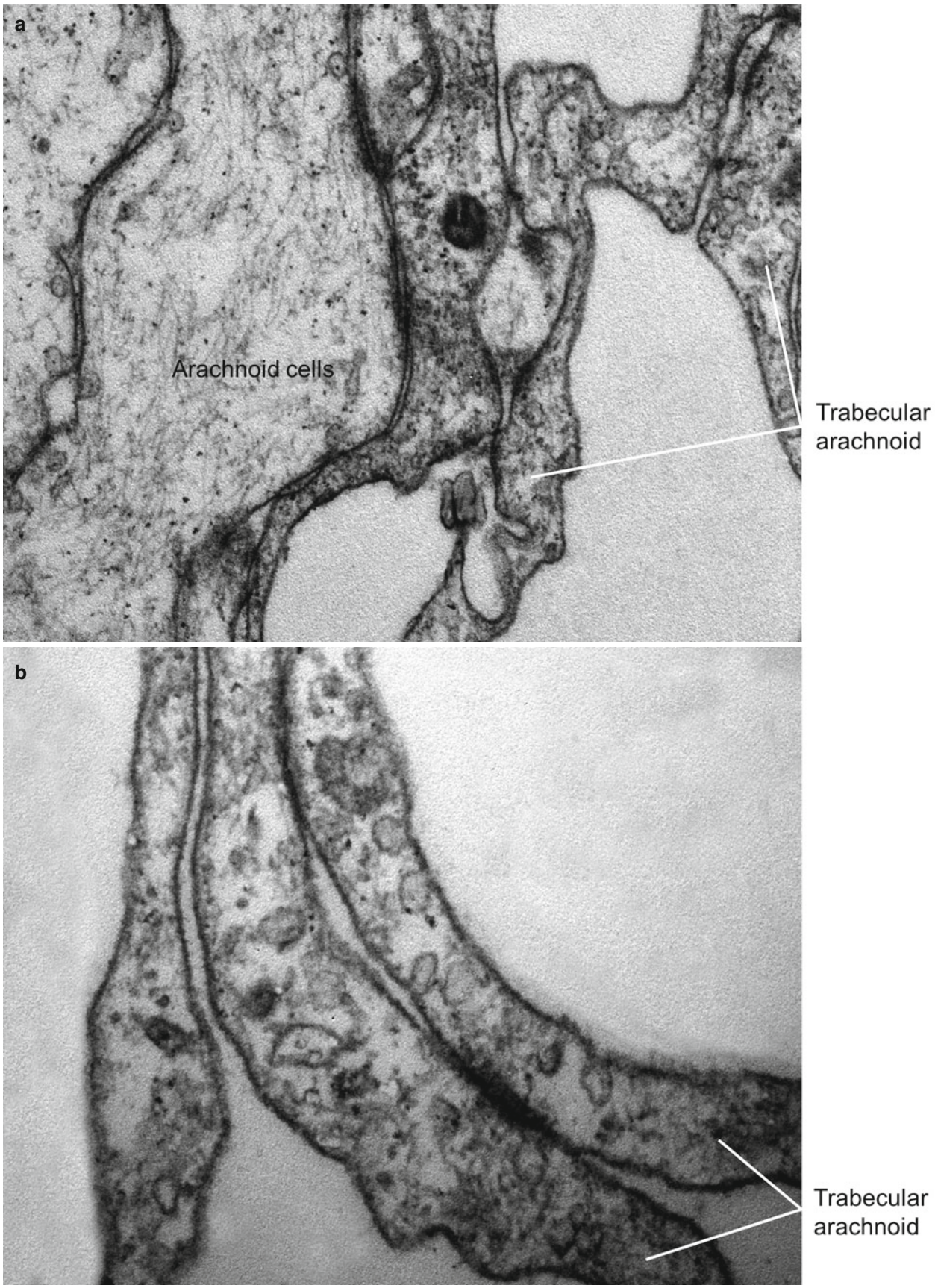

Fig. 24.26 Trabecular arachnoid. (**a**, **b**) Detail of Inner portion of trabecular arachnoid close to arachnoid layer. Transmission electron microscopy. Magnification: **a**, ×60,000; **b**, ×120,000

References

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