Significance of anatomical variations for clinical practice

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Anatomical variations are an often encountered phenomenon and even though some have been described extensively in literature, many are still being reported for the first time. It would be no exaggeration to state that every structure in our body can vary to a certain extent from the usual presentation, which does not necessarily render it abnormal or pathological. Often, variations are discovered in the structure, origin, insertion and innervation of muscles (1-8), in the branching pattern and position of blood vessels (9-16), as well as in the anatomy of the bones of the upper and lower limb, namely presence of additional or accessory ossicles (17-19).

The importance of such anatomical variations in the clinical setting is based on the fact that they represent a variant of the normal presentation and as such, usually do not require therapeutic activities. They can, however, present diagnostic dilemmas or become symptomatic under certain conditions. Variations in the branching pattern or position and course of blood vessels can affect routine clinical procedures, such as blood pressure monitoring or intravenous drug application. They may provide grafting material for bypass surgeries but may as well create difficulties and necessitate changes in the selected surgical technique during complex interventions, such as catheterization of the cardiac cavities, flap surgery or amputations (9-16). Muscle variations also represent a fairly frequent discovery and can be associated with presence of additional heads and/or bodies, aberrant tendons and unusual innervation (1-8). Also, presence of additional muscles, as well as absence of normally present muscles has been widely reported. Clinical awareness of these variations is important in the context of compartment syndrome, use of the aberrant structures as grafting material in reconstructive surgery, proper interpretation of imaging modalities, pain management therapies and others (1-8). The presence of additional ossicles, such as accessory navicular bone (17) and os subtibiale (18) in the foot is considered an anatomical variation but may sometimes be associated with pathological symptoms including pain, tenderness, shoe pressure, erythema and oedema (17,18). The differential diagnosis of such symptoms is very broad and may include benign bone tumours (chondroma, osteoblastoma, giant cell tumour of bone, desmoid fibroma, etc.), non-neoplastic lesions (osteomyelitis, rheumatoid arthritis-associated conditions, and osteoarthrosis-related conditions), various cysts (solitary or aneurismal bone cysts) and others (19). Therefore, knowledge of such accessory ossicles is of key importance for the proper diagnosis and therapy, since very often, if the conservative treatment of these symptoms fails, then surgical treatment will be indicated.

In conclusion, clinical awareness of known and newly discovered anatomical variations, which can be achieved through a frequent review of the pertinent literature in specialized journals, is the key to a successful outcome in the clinical setting. The availability of such literature data, however, is in no small part a responsibility of specialists from various clinical disciplines and anatomists and surgeons in particular. Therefore, the International Journal of Anatomical Variations welcomes the wish of every medical specialist to contribute to our common database, as we strive to provide better healthcare and to deepen our knowledge about the human body.

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