Chapter 8
Temporal Lobe Syndromes: An Overview

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ABSTRACT

Temporal lobes are one of the four major lobes of the cerebral cortex and perform a complex array of interrelated functions. They play an important role in various day-to-day functioning. The common pathologies leading to isolated temporal lobe dysfunction are infarction (of the middle cerebral artery), hemorrhage, seizures, tumors, encephalitis, and traumatic brain injury. Temporal lobe syndromes include a wide array of various neurological (Kluver-Bucy syndrome, Geschwind Gastaut syndrome, etc.), elementary (e.g., vertiginous syndromes, hallucinations, etc.), neuropsychiatric (e.g., anxiety, agitation, aggression, etc.), and cognitive (e.g., Korsakoff amnesia, cortical deafness, etc.) disorders. The presentation depends on a multitude of factors including involvement of dominant or non-dominant lobe. Left temporal lobe involvement usually leads to various forms of aphasia while right side involvement leads to more covert and varied syndromes. In this chapter, the authors discuss the anatomy of the temporal lobe, its functional aspects, and various syndromes of temporal lobe dysfunction.

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INTRODUCTION

The brain’s cerebral cortex is the outermost part of the brain which contains two cerebral hemispheres connected by the corpus callosum. Traditionally, each of these cerebral hemispheres is divided into four lobes: Frontal, parietal, temporal and occipital. The frontal lobe is located in the most anterior part of the brain and extends to the central sulcus. The frontal lobe is involved in language, emotion, motor control, and reasoning. The frontal lobe contains the motor cortex, prefrontal cortex, and Broca’s area. The parietal lobe is located behind the frontal lobe and contains the somatosensory cortex, essential in sensory processing such as touch, pain, and temperature. The occipital lobe is located in the most posterior part of the brain and contains the primary visual cortex. The temporal lobe is located on the side of the head and is important in multiple aspects of brain functions such as hearing, memory, emotions, language, learning, time perception, special senses, and motivation. Damage to the temporal lobe can be caused by a multitude of cerebral pathologies including seizures, infarction, hemorrhage, trauma, encephalitis, etc. Thus, the temporal lobe damage can lead to impairment in one or several areas of brain functioning depending on the nature, extent, site, and laterality of the lesion. Here we describe the various types of temporal lobe syndromes and relevant functional
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