

PROPER NAME ANOMIA AFTER LEFT TEMPORAL SUBCORTICAL HEMORRHAGE

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ABSTRACT

We report here a patient with proper name anomia following subcortical hemorrhage in the left superior temporal gyrus. Despite the preserved ability to retrieve common names, the patient could not retrieve the names of people, countries, or racehorses, which he could recognize quite well. Semantic knowledge regarding people, countries, and racehorses was also preserved. In addition, the finding that phonological cueing was effective with preservation of the ability to point to photos corresponding to their names suggested that the lexicon of proper names was preserved in this patient. Thus, the output lexicon appeared to be partially disconnected from semantic knowledge. This rare and limited lesion suggested that the superior temporal gyrus plays an important role in connecting semantic knowledge and the output lexicon.

Key words: proper name anomia, left superior temporal gyrus, left temporal lobe, subcortical hemorrhage

INTRODUCTION

Since its first description in 1980 by McKenna and Warrington (1980), many cases of proper name anomia have been reported (Cohen and Burke, 1993; Damasio and Tranel, 1993; Semenza and Zettin, 1988; Semenza et al., 1995; Yasuda et al., 2000). Some cases of proper name anomia were shown to be associated with semantic impairment of names (Ellis et al., 1989; Incisa della Rocchetta et al., 1998; Lyons et al., 2002; Verstichel et al., 1996), while others showed no associated semantic impairment (Cipolotti et al., 1993; Cohen et al., 1994; Fery et al., 1995; Fukatsu et al., 1999; Harris and Kay, 1995a, 1995b; Hittmair-Delazer et al., 1994; Incisa della Rocchetta et al., 1998; Lucchelli et al., 1997; Lucchelli and De Renzi, 1992; Lyons et al., 2002; McKenna and Warrington, 1980; Reinkemeier et al., 1997; Semenza and Sgaramella, 1993). These cases were classified into three types: proper name anomia restricted to people's names (Carney and Temple, 1993; Cohen et al., 1994; Fery et al., 1995; Hittmair-Delazer et al., 1994; Lucchelli and De Renzi, 1992; McKenna and Warrington, 1980; Reinkemeier et al., 1997; Saetti et al., 1999; Verstichel et al., 1996); that affecting both people's names and other proper names (Harris and Kay, 1995b; Semenza and Zettin, 1988, 1989; Incisa della Rocchetta et al., 1998); and that restricted to proper names but not people's names (Incisa della Rocchetta et al., 1998; Lyons et al., 2002).

Radiologically confirmed lesions causing proper name anomia are widely scattered throughout the left cerebral hemisphere. The most common site is the left medial temporal lobe (Incisa della Rocchetta et al., 1998; Verstichel et al., 1996; Reinkemeier et al.,

1997). The second most common site is the anterior portion of the left temporal lobe. For example, after left temporal lobectomy patients often show proper name anomia (Barr et al., 1990; Fukatsu et al., 1999; Saetti et al., 1999). Functional neuroimaging studies also suggested the importance of the rostral part of the left temporal lobe for retrieval of proper names (Damasio et al., 1996; Gorno Tempini et al., 1998; Tsukiura et al., 2002). The third most common site is the ventroanterior portion of the left thalamus or the genu of the left internal capsule (Cohen et al., 1994; Fery et al., 1995; Lucchelli and De Renzi, 1992; Lucchelli et al., 1997; Moreaud et al., 1995). Proper name anomia is also caused by lesions in other areas, including the lateral portion of the left frontotemporal lobe (Carney et al., 1993; Hittmair-Delazar et al., 1994; Saetti et al., 1999; Semenza and Zettin, 1989), the left frontal lobe (Lyons et al., 2002), the left parieto-occipital area (McKenna and Warrington, 1980; Semenza and Zettin, 1988; Semenza and Sgaramella, 1993), the left posterior temporal lobe (Cipolotti et al., 1993; Hanley, 1995), and large parts of the left frontal lobe (Harris and Kay, 1995a,b).

The variety of symptoms and lesions suggested that complex cortical networks might subserve retrieval of proper names. We describe here a patient who developed selective impairment limited to the retrieval of proper names following a relatively restricted lesion in the left superior temporal gyrus.

CASE REPORT

A 56-year-old right-handed male factory worker (SK) with a 12th-grade education was admitted to

a nearby hospital because of right hemiparesis. SK's previous medical history included a 15-year history of hypertension and cigarette smoking. A CT scan showed an intracranial hemorrhage in the left temporal lobe. Left temporal craniotomy was performed for removal of the hematoma. On the following day, the patient was alert and well oriented. SK spoke fluently, but showed moderate difficulty in finding words in daily conversation. Six weeks later, SK was admitted to the Rehabilitation Department of Tohoku University Hospital for evaluation and rehabilitation of the language impairment.

On admission, the patient was alert and showed good orientation to time, place, and people. Neurological examination revealed mild right hemiparesis and incomplete upper right quadrantanopsia. The remaining cranial nerves, motor functions, reflexes, and superficial and proprioceptive sensations were all normal.

Neuroradiological Findings

Brain MRI revealed an elongated rostrocaudal high intensity area in the subcortical region along the upper bank of the superior temporal sulcus, sparing the Heschl's gyrus and adjacent part of Wernicke's area (Figure 1). Additional small lesions were also noted in the bilateral frontal, temporal, and parietal deep white matter. The anterior part of the temporal lobe, uncus, and hippocampo-parahippocampal areas were not affected. To assess the lesion site more precisely, it was plotted on the coronal section of Talairach and Tournoux's atlas (Talairach and Tournoux, 1988). The subcortical damage included the caudal three quarters of the superior temporal gyrus, part of the

supramarginal gyrus, part of the middle temporal gyrus, and parts of the optic radiation, tapetum, and inferior longitudinal fasciculus of the left hemisphere (Figure 2).

Neuropsychological Assessment

SK's spontaneous speech was fluent without dysarthria or grammatical abnormalities. The patient showed moderate word-finding difficulty and some phonemic and verbal paraphasia. Confrontation naming of objects was mildly impaired. SK's repetition of spoken sentences was mildly disturbed. SK's ability to comprehend spoken language was nearly normal. He showed some phonemic paralexia in reading sentences aloud but comprehension of written language was good. SK occasionally showed literal paraphasia of Japanese kana characters and was sometimes unable to retrieve kanji characters. The patient showed no buccofacial, ideomotor, or ideational apraxia. Calculation, construction, and visuospatial abilities were intact.

The patient's score on the Token test (shortened version: De Renzi and Faglioni, 1978) was 29.5/36. On the Wechsler Adult Intelligence Scale-revised (WAIS-R), SK's full IQ was 92 with a VIQ of 86 and a PIQ of 99. SK's digit span forward was three and tapping span was six. SK's visual memory index of the Wechsler Memory Scale-revised (WMS-R) was 104. The results of the Rey-Osterreith Complex Figure Test were 35/36 for copying, 19/36 for immediate recall, and 17.5/36 for 30-minute delayed recall.

SK's aphasic symptoms improved rapidly and the second assessment of Standard Language Test for Aphasia (SLTA) showed almost normal

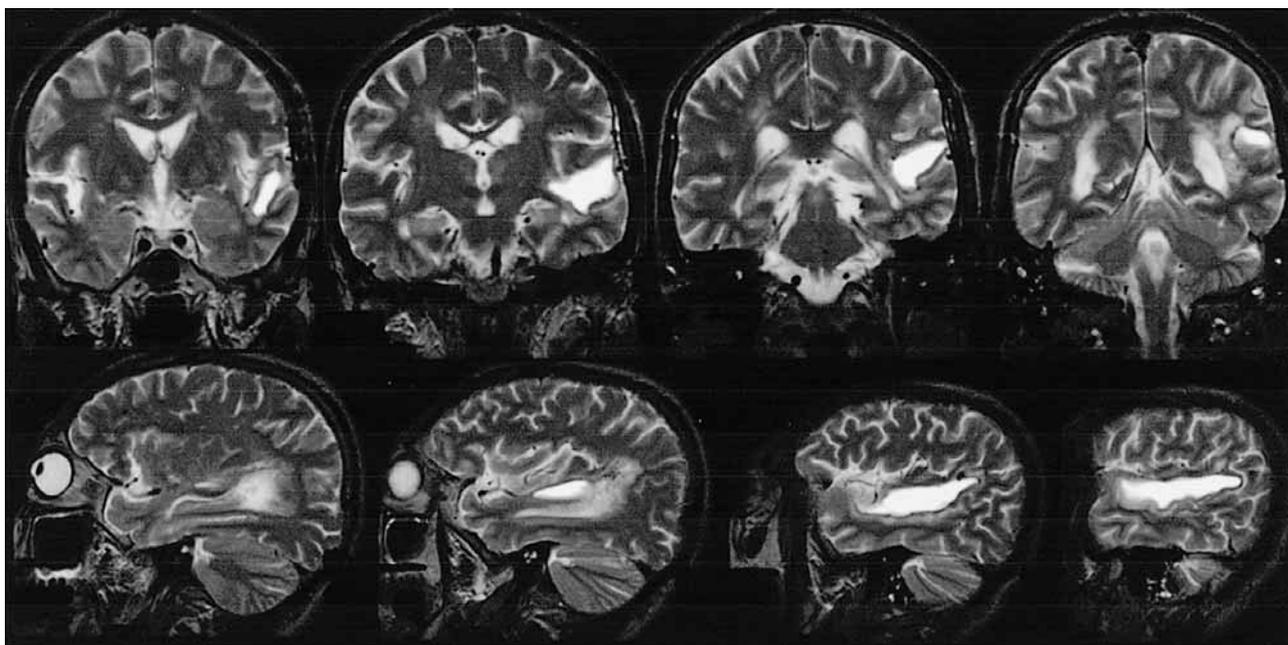


Fig. 1 – MRI showing a subcortical lesion mainly located in the left superior temporal gyrus.

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