Computed Tomography for Primary Headache

PRİMER BAŞ AĞRISINDA BİLGİSAYARLI TOMOGRAFİ

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Abstract

Objective: Headache is one of the most common physical complaints. Although headaches are generally benign, neuro-imaging studies are frequently performed to exclude serious underlying disease. In this study, we aimed to determine the frequency of abnormal computed tomography (CT) scans of the brain in the evaluation of patients with headache who present without neurological signs.

Material and Methods: A retrospective study was performed in order to evaluate the frequency of abnormalities detected by CT in 191 patients presenting in the Neurology Outpatient Clinic between January 1998 and November 2003 with complaints of tension-type and chronic daily headache, migraine and migrain-like headache, as well as mixed-type headache.

Results: CT scans was normal in 87.4% of the patients. Some abnormalities were encountered in about one out of eighth patients. Among the abnormalities, the most commonly seen were; lacunal (2.1%), inflammatory sinus disease, polypoid mass and retention cyst (1.6%), cortical atrophy (3.1%), cavum septum pellucidum (1%), calcification (1%), and others (3.6%). None of the patients had clinically significant lesions.

Conclusion: We found no clinically significant abnormality in headache patients with normal neurological examinations.

Key Words: Headache, tomography scanners, X-ray computed

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Özet

Amaç: Baş ağrısı en sık rastlanan fiziksel şikayetlerden biridir. Baş ağrıları genellikle selim olmalarına rağmen, altta yatan ciddi bir hastalık olasılığına karşı görüntüleme sıklıkla yapılır. Bu çalışmada baş ağrısı olan ancak nörolojik muayene bulgusu vermeyen hastaların bilgisayarlı beyin tomografisi (BT) ile değerlendirmesi sonrası pozitif bulgu sıklığını belirlemeyi amaçladık.

Gereç ve Yöntemler: Nöroloji polikliniğine 1998 Ocak ve 2003 Kasım ayları arasında başvuran 191 migren, gerilim tipi, kronik günlük, migranöz ve miks tip baş ağrılı hastada BT ile saptanan anormalliklerin sıklığını saptamak üzere bu retrospektif çalışmayı gerçekleştirdik.

Bulgular: Bu çalışmada BT görüntülemesi hastaların %87.4'ünde normaldi. Her sekiz hastanın birinde bazı anormallikler saptandı. Anormallikler arasında en sık rastlananlar; lakün (%2.1), inflamatuar sinüs hastalığı, polipoid kitle ve retansiyon kisti (%1.6), kortikal atrofi (%3.1), cavum septum pellucidum (%1), kalsifikasyon (%1), ve diğerleri (%3.6). Hiçbir hastada klinik olarak anlamlı bulgu saptanmadı.

Sonuç: Nörolojik muayenesi normal olan baş ağrısı hastalarında klinik olarak anlamlı hiçbir bulguya rastlamadık.

Anahtar Kelimeler: Baş ağrısı, bilgisayarlı tomografi, lezyon

Headache is one of the most common symptoms that neurologists evaluate.[1] The cause or type of most headaches can be determined by a careful history supplemented by a general and neurological examination and by applying the strict criteria proposed by the International Headache Society. Headache disorders are divided into 2 subgroups -primary and secondary- according to the criteria proposed.[2] Data from population based epidemiological studies of the prevalence of migraine headache is 2-33% for women and 1-25% for men.[3] In another study, prevalence of episodic tension-type headache is 20-30% and that of chronic type is 3%.[4] Ninety percent of the people have complaints of headache at least once during their lives, and it is impossible to perform neuroimaging studies in all of them.[5] There are at least two reasons that make the patient consult a physician for headache:

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a) Because he or she is afraid of having an intracranial lesion such as brain tumor or aneurysm and b) Because the pain is severe enough to negatively influence her or his quality of life.[6] In this retrospective study, we aimed to review the cranial computerised tomography (CT) findings in primary headache patients and check if there were any significant lesion detected by CT scan.

Material and Methods

This is a retrospective analysis of CT findings of 191 patients with headache as primary complaints. 138 (70.6%) of them were females, and 53 (29.4%) were males whose ages ranged between 18 to 60 years. They attended to neurology outpatient clinic from January 1998 to November 2003. CT apparatus was Toshiba TCT600HQ. CT images were taken with 10 mm slices supratentorially and 5 mm slices infratentorially. All CT images were analysed by the same radiologist. The headache type was classified according to the International Headache Society (IHS) criteria, and chronic daily headache diagnosed according to Silberstein criteria.[1,7] Classified headache types were migraine (IHS class 1), tension type headache (IHS class 2), migrainous disorder not fulfilling migraine criteria (IHS class 1.7), chronic daily headache, and mixed-type headache. None of the patients had any neurological findings on neurological examinations. Exclusion criteria included:

1) History of central nervous system (CNS) diseases including head trauma,

2) History of intracranial neoplasm,

3) History of hypertension, diabetes mellitus, coronary artery disease, myocardial infarction, cigarette and alcohol use or hyperlipidemia,

4) Signs and symptoms of active sinusitis, and systemic febrile illness.

After analysis was completed, results were divided into three groups on the basis of imaging findings; P0: Normal imaging findings, P1: Minor imaging findings, P2: Major imaging findings[8].

Results

There were 58 patients with migraine, 72 patients with tension type headache, 40 patients with chronic daily headache, 17 patients with migrainous disorder and 4 patients with mixed-type type headache. 191 cranial CT were performed and in 24 patients, lesions were identified on CT images. The frequency of CT abnormality was 12.6%. Patients were graded and there were twenty-four P1 patients, and the rest of the patients were graded as P0 (87.4%). Twenty-four incidental findings included;

1) Lacune (2.1%, n: 4),

2) Chronic sinusitis, retention cyst and polypoid mass (1.6%, n: 3),

3) Cortical atrophy (3.1%, n: 6),

4) Cavum septum pellucidum (1%, n: 2),

5) Calcifications (1%, n: 2),

6) Others (3.6%, n: 7).

Abnormal CT findings were shown in Table 1.

Discussion

Headache is the most frequent reason for asking a neuroimaging study.[5] Standard textbooks advice consideration of imaging procedures for patients if there is a suspicion of various brain tumors, epidural-subdural-intracerebral hematoma, hydrocephalus, cerebral abscess and meningeal carcinomatosis.[9] As the place of neuroimaging in headache differential diagnosis has been a matter of dispute, in April 2000, the Quality Standards Subcommittee of the American Academy of Neurology, by analysing a total of 28 studies (grade IV evidence provided by expert opinion, nonrandomized historical controls), recommended neuroimaging investigation (CT or MRI) “in patients with atypical headache patterns, a history of seizures, or focal neurologic signs or symptoms”.[10] But there are a few case reports in which patients with chronic headaches and no additional findings had gross intracranial pathologies detected by CT.[11]

The present study demonstrated that CT scan was abnormal in 12.6% of the patients with headaches without any neurological signs. For our

Table 1. Cranial CT findings in patients with different types of headaches.

Patient	Age/sex	Types of headache	Finding
1	39/M	Tension	Cavum septum pellucidum
2	46/F	Migrainous	Frontoparietal cortical atrophy
3	30/M	Migrainous	Right maxillary sinus retention cyst
4	38/F	Migraine	Cavum vargae
5	60/F	Tension	Cerebral atrophy
6	18/F	Migraine	Lateral ventricular constriction
7	28/M	Migrainous	Right maxillary polypoid mass
8	48/F	Tension	Subcutaneous fibroid mass 0,5 cm in diameter on left parietal lobar region
9	59/M	Tension	Dolycoechtatic basillary artery
10	60/M	Chronic daily	Hypodense ischemic lesion on left caudat nucleus
11	41/M	Tension	Hypodense ischemic lesion on right parietotemporal region
12	49/F	Chronic daily	Left temporal lobar atrophy
13	50/F	Migraine	Cerebral atrophy and ventricular dilatation
14	18/M	Tension	Occipital hypodense probably ischemic lesion
15	20/M	Migraine	Cavum septum pellucidum
16	20/F	Migraine	Bilateral maxillary sinusitis
17	53/M	Tension	Bilateral arachnoid cysts on vertex
18	54/F	Tension	Hypodense ischemic lesion on right parietal lobe
19	55/M	Tension	Periventricular leukomalacia, cerebellar atrophy
20	54/F	Tension	Dilatation of bilateral frontal horns of lateral ventricles
21	53/F	Migrainous	Milimetric calcification in the region of falx cerebri
22	50/F	Chronic daily	Mild cortical atrophy
23	60/F	Chronic daily	Dural based calcified lesion localized posterolaterally to parietal lobe
24	52/F	Tension	Basal ganglia calcification

patients, results were similar to one of the previous studies.[12] The chance of finding any lesions in migraine was (8.6%, n: 5), in tension-type headache (13.8%, n: 10), in chronic daily headache (5%, n: 2), in migrainous disorder was (17.6%, n: 3). There was not any significant lesion observed among our patients. In literature review, Akpek studied 592 chronic headache of unspecified type and didn't find any significant abnormality.[8] But on the contrary, Baker found 34 significant abnormalities in 505 studied patients with the chance of 0.67%.[13] In a study with 435 patients with migraine and without any neurologic signs or symptoms , there was only one significant abnormality, and in the same manner, in another study, there was not any significant abnormality in 129 patients.[14,15] For tension type headache, studies didn't find any significant abnormality.[15,16] In our study group, there wasn't any significant lesion in migraine, chronic daily, migrainous and mixed type headache patients.

In conclusion, in this study, the yield for clinically significant abnormalities was low, and there was not any surgical indication. These results suggest that, routine CT of the brain in headache patients with normal physical and neurological examinations and without unusual clinical symptoms has a low likelihood ratio for discovering significant intracranial disease. We agree with previous authorsthat, neuroimaging should always be requested in the case of the presence of alarm signs (red flag signs):[6,17]

1) Abnormalities in neurological examination,

2) Atypical headache not completely fulfilling IHS criteria,

3) Changes in headache pattern,

4) Lack of response to therapy,

5) Presence of abnormalities in other investigations, such as skull x-ray and EEG,

6) Headache in patients with extracranial neoplasm.

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