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The togetherness of neurofibromatosis type-1 and pheochromocytoma, case report and review of the literature

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Abstract
Neurofibromatosis Type 1 (NF1) is one of the most frequently-observed genetic diseases. NF1 patients are under the risk of Phaeochromocytoma that is secondary to NF1 gene mutation, vascular dysplasia, scoliosis, benign and malign cancer. In this study, we are presenting Neurofibromatosis Type-1 and Phaeochromocytoma in a 24-year-old female patient who was followed due to resistant hypertension. We can conclude that young patients who are followed due to resistant hypertension must be scanned for the Hereditary Phaeochromocytoma. This is extremely important in preventing important systemic symptoms and even deadly results.

Keywords: Resistant Hypertension, Neurofibromatosis Type-1, Phaeochromocytoma

1. Introduction
Neurofibromatosis Type-1 (NF1) was previously known as Recklinghausen Disease. It holds the neurocutaneous system with autosomal dominant inheritance. The classic symptoms of NF1 are cafe-au-lait stains, axillary freckles in skinfolds, neurofibromas, brain tumors, hematomas and characteristic bone lesions. In addition to these, NF1 patients are under the risk of Phaeochromocytoma, vascular dysplasia, scoliosis and cancer [1]. We determined the togetherness of Neurofibromatosis Type-1 and Phaeochromocytoma in a case who was followed due to resistant hypertension. Our desire is to remind such a case with clinical, histopathological and radiologic imaging findings.

1.1 Case Presentation
24-year old female patient applied to our clinic with complaints like palpitation, perspiration, and increase in tension arterial. The patient had these complaints for 5 years. The mother of the patient had died due to hemorrhagic cerebral event. The patient did not have any diseases except for hypertension. She did not smoke of drink alcohol. In the physical examination, 9 cafe-au-lait stains were detected especially in the back, chest, neck, extremities and body, the biggest of which were 5x4 cm in diameter (Picture 1). In addition, color changes like speckles were detected in lisch nodule and axillary area (Picture 2). The blood pressure of the patient was 240/130 mmHg, the pulse was 120 beat/min/rhythmic. There was hyperemia in the face and body, tremors in the hands, and rales in both lung basals. The biochemical test results of the patient was as follows; glucose: 92 mg/dL, creatinine: 0.89 mg/dL, potassium: 5.2 mEq/L, sodium: 144 mEq/L, ALT: 10 UI/L, calcium: 9.8 mg/dL, TSH: 2.3 uIU/mL, urinary protein: 30 (0-25) mg/dL, erythrocyte: 8/HPF (0-4), WBC: 7440/mm3, Hgb: 13 gr/dl. In addition, after three days of vanilmandelic acid diet, the vanilmandelic acid in 24-hour urine was as follows; 314 (0-6.6) mg/day, noradrenalin: 3169 (0-97) µg/day, normetanephrine: 31915 (105-354) µg/day, adrenalin: 851 (0-27) µg/day, metanephrine: 33242 µg/day. Sphenoid dysplasia was detected in direct graphics (Picture 3). A bulk lesion was determined in abdominal Magnetic Resonance Imaging, which was oval in the right adrenal localization with 62x51 mm in size, having good borders, heterogenic hyperintense in T1, hyper intense in T2, not showing clear signal loss in out-of-phase series and fat-pressure series (Picture 4). These findings were in consistence with neurofibromatosis Type-1 and Phaeochromocytoma in the patient. In the follow-ups, the patient received right adrenelectomy in urology clinic. The tissue pathology, Phaeochromocytoma, KI-67 indexwere reported as 2-3%.The hypertension regressed in post-operative follow-ups, and the anti-hypertensives were terminated. The catecholamine and its metabolites in the urine were normal, which were tested 2 weeks after the surgery.

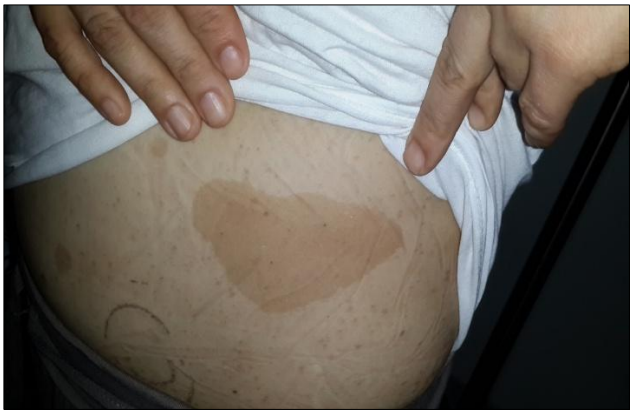

Fig 1: cafe-au-lait stains on the body

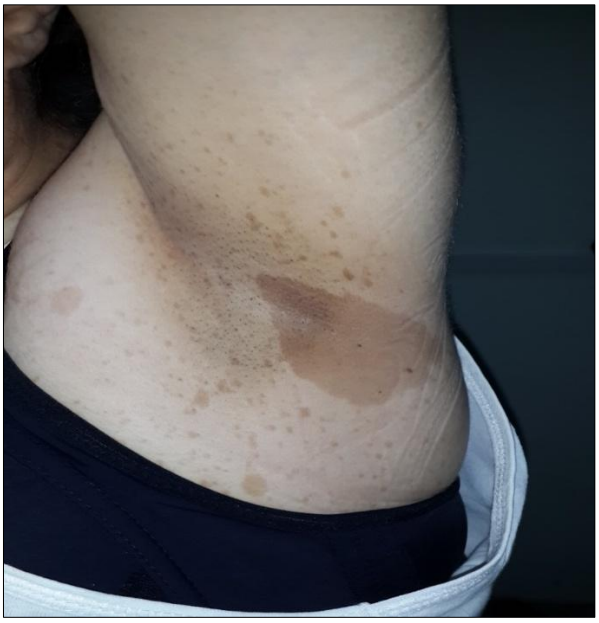

Fig 2: cafe-au-lait stains on the axilla

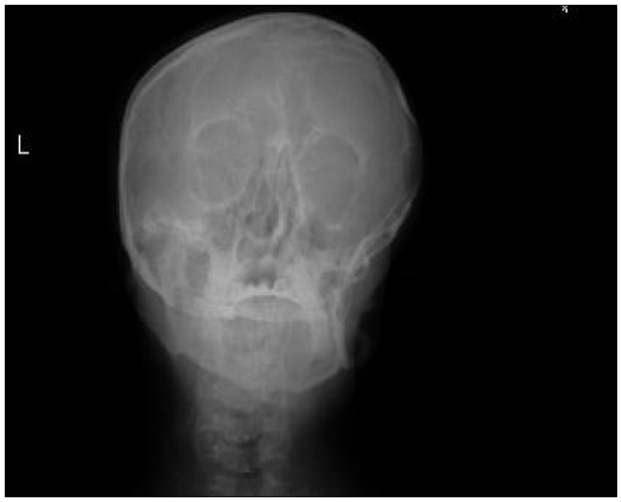

Fig 3: Sphenoiddysplasia

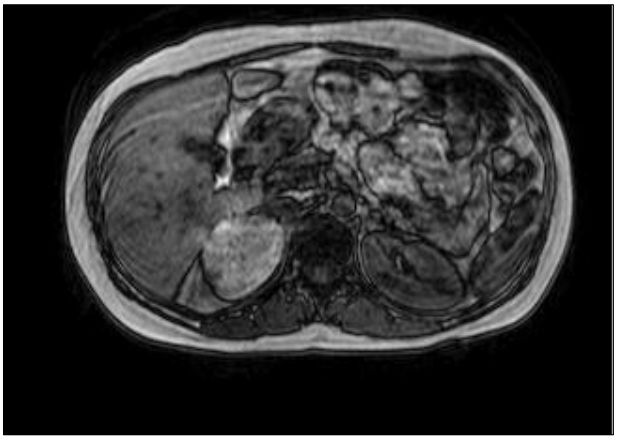

Fig 4: Magnetic Resonance Imaging of Phaeochromocytoma

2. Discussion

Neurofibromatosis Type 1 (NF1) is one of the most frequently-observed genetic diseases. The risk of benign and malign tumor development has increased in these patients [2]. It has been reported in various studies that the risk of embryonic neural crest-basedtumor, and the Phaeochromocytoma, leukemia, glioma, rhabdomyosarcoma, and astrocytoma and malign peripheral nerve sheath tumors is higher in these patients due to the NF1 gene mutation [3]. We also determined Phaeochromocytoma in our case.

The Phaeochromocytoma prevalence in NF1 patients was % 0.1-5.7. It was demonstrated in autopsies that the Phaeochromocytoma prevalent was 13% [4]. Hypertension is observed in 20-50% in Phaeochromocytoma detected in NF1. The average age for tumor development is 40 years (similar to general population). These are mostly (84%) unilateral and firstly adrenal tumors. Nearly 12% are malign [4]. The diagnosis in our case was considered due to the resistant hypertension. Phaeochromocytoma was localized in right adrenal location.

NF1 diagnosis may generally be made with clinical examination [5]. We also made the NF1 diagnosis with physical examination. Phaeochromocytoma diagnosis is made by the high values observed in the tests on urine and plasma free catecholamines, and high catecholamine metabolism products. It is localized with imaging methods [6]. We detected the catecholamines and their metabolites high in 24-hour-urine. We localized the tumor in right adrenal in abdominal MRI.

3. Conclusion

Phaeochromocytomas may appear as sporadicor multiple endocrine neoplasia Type 2, Neurofibromatosis Type-1, Von Hippel-Lindau syndrome and inherited paraganglioma-Phaeochromocytoma syndrome-related manner [7]. As a result, itis possible that hereditary Phaeochromocytoma exists in cases who are followed due to these syndromes. These cases must be scanned for Phaeochromocytoma and other tumors. This will prevent systemic symptoms and even deadly results.

4. References

1. Anderson JL, Gutmann DH. Neurofibromatosis type 1. Handb Clin Neurol. 2015; 132:75-86.
2. Seo YN, Park YM. Association between Neurofibromatosis Type 1 and Breast Cancer: A Report of Two Cases with a Review of the Literature. Case Rep Med. 2015; 2015:456205.
3. Madanikia SA, Bergner A, Ye X, Blakeley JO. Increased risk of breast cancer in women with NF1.American Journal of Medical Genetics, Part A. 2012; 158(12):3056-3060.
4. Fishbein L, Nathanson KL. Pheochromocytoma and paraganglioma: understanding the complexities of the genetic background. Cancer Genet. 2012; 205:1-11.
5. Lefebvre M, Foulkes WD. Pheochromocytoma and paraganglioma syndromes: genetics and management update. Curr Oncol. 2014; 21(1):8-17.
6. Hickman PE, Leong M, Chang J, Wilson SR, McWhinney B. Plasma free metanephrines are superior to urine and plasma catecholamines and urine catecholamine metabolites for the investigation of phaeochromocytoma. Pathology. 2009; 41(2):173-7.
7. Santos P, Pimenta T, Taveira-Gomes A. Hereditary Pheochromocytoma. Int J Surg Pathol, 2014; 22(5):393-40.