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ARAŞTIRMA MAKALESİ

ADENOTONSİLLEKTOMİNİN KISA DÖNEMDE KAN PARAMETRELERİ ÜZERİNE ETKİSİ

SHORT TERM EFFECTS OF ADENOTONSILLECTOMY ON BLOOD PARAMETERS

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ÖZET

Çalışmamızda adenotonsillektomi ameliyatının çocuklarda kısa dönemde eritrosit (RBC), hemoglobin (Hgb), hemotokrit (Htc) ve mean corpusculer volume (MCV) değerleri üzerine etkisini araştırmayı amaçladık.

Çalışmaya kronik adenotonsillit nedeniyle klasik soğuk bıçak tonsillektomi ve adenoidektomi küretajı yapılan 60 olgu dahil edildi. ASA II-III, uyku apnesi hikayesi olanlar, gelişme geriliği olanlar, sistemik hastalığı olanlar ve operasyon esnasında 200cc den fazla kanayanlar dahil edilmedi. Preoperatif, postoperatif birinci hafta, birinci ay ve üçüncü ayda alınan RBC, Hgb, Htc ve MCV değerleri retrospektif olarak analiz edildi.

Çalışma grubu ortalama yaşları 6.07±0.28 (yaş aralığı, 3-9) yıl olan 37'si erkek 23'ü kız 60 çocuktan oluşmaktaydı. RBC, Hgb ve Htc değerlerinin dört ölçümüde istatistiki olarak bir önceki ölçümden anlamlı derecede farklı olarak saptandı (sırasıyla,p=0.001, p=0.001, ve p=0.004). MCV değerleri arasında anlamlı fark saptanmadı (p=0.182). Preoperatif değerler postoperatif değerlerle ayrı ayrı karşılaştırıldığında, RBC (p=0.02) ve Hgb'nin (p=0.007) postoperatif birinci haftada anlamlı oranlarda düştüğü, postoperatif üçüncü ayda ise RBC (p=0.001), Hgb (p=0.002) ve Htc'nin (p=0.005) anlamlı oranda arttığı gözlendi.

Adenotonsillektomiye bağlı,RBC, Hb ve Htc operasyon esnasında veya operasyon sonrasında fakedilmeyen kanamalara bağlı olarak düşmekte ancak destek tedavisine gerek kalmadan bir ayın sonunda operasyondan önceki seviyelerine çıkmaktadır.

Anahtar kelimeler: Eritrosit, hemoglobin, hemotokrit, mean corpusculer volume, adenotonsillektomi.

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ABSTRACT
We evaluated the short-term effects of adenotonsillectomy on red blood cell (RBC), hemoglobin (Hgb), hematocrit (Htc) and mean corpuscular volume (MCV) in children.
60 children, who underwent conventional cold tonsillectomy and curettage adenoidectomy due to chronic adenotonsillitis were recruited for the study. Exclusion criteria were; ASA physical status II-III,history of sleep apnea, developmental delay, or any systemic disease and intraoperative bleeding more than 200cc. Preoperative, postoperative first week, first month and third month RBC, Hb, Htc and MCV values were evaluated retrospectively.
The study population consist of 37 (61.7%) male and 27 (38.3%) female children, with a mean age of 6.07±0.28 (range, 3 to 9)years. There were statistically significant differences between four consecutive measurements of RBC, Hgb and Htc (p=0.001, p=0.001, and p=0.004, respectively). No significantly differences were determined in the measurements of MCV values(p=0.182). When preoperative values compared with postoperative tests separately, RBC (P=0.02) and Hgb (p=0.007) were significantly decreased one week after the adenotonsillectomy. RBC (P=0.001), Hgb (P=0.002) and Htc (P=0.005) were significantly increase 3 months after operation.
RBC, Hb and Htc decreased after adenotonsillectomy due to intraoperative or postoperative unnoticed bleeding, but values are increased to preoperative levels without support treatment.

Key Words: Red blood cell, hemoglobin, hematocrit, mean corpuscular volume and adenotonsıllectomy

INTRODUCTION

The main etiologies of adeno tonsillectomy in childhood are recurrent adenotonsillitis, recurrent serous otitis media episodes, peritonsillar abscess and mostly apnea associated with adeno tonsillar hypertrophy (1). Although tonsillectomy is one of the most commonly performed surgeries, a review of literature reveals only a few articles dealing with the study of intraoperative blood loss and post-operative results.
The complete blood count (CBC) with differential is one of the most common laboratory tests performed today. It gives information about the production of all blood cells and identifies the patient's oxygen-carrying capacity through the evaluation of red blood cell (RBC) indices, hemoglobin (Hgb), and hematocrit (Htc) (1).
The goal of the present study was to analyze the effects of adenotonsillectomy on RBC, Hgb, Htc, and MCV in a short term.

PATIENTS AND METHODS

Study design: 60 children (37 male, 23 female), who underwent adenotonsil lectomy with cold knife dissection method for tonsillectomy and curettage method for adenoidectomy were recruited for the study. Children who had ASA physical status II-III or-more, history of sleep apnea, develop mental delay, or any systemic disease and intraoperative bleeding more than 200cc were excluded from study. All study cases were habitants of Izmir and have at least average socioeconomic level. Aspirated blood in vacuum were calcu- lated for each operation.
Outcome parameters: Preoperative, postoperative 1. week, 1. month and 3. months mean values of RBC, Hb, Htc and MCV were reviewed retrospectively. Each data were compared with previous test values. Furthermore, postoperative and preoperative values were compared separately.
Statistical analysis: Statistical analysis was performed using SPSS® 20.0 software (SPSS Inc., Chicago, IL, USA). Four values of RBC, Hb, Htc and MCV were compared by repeated ANOVA test. Postoperative each value were compared with preoperative values by Mc Nemar test.p<0.05 was considered to be statistically significant.

RESULTS

The study population consisted of 37 (61.7%) male and 27 (38.3%) female children, with a mean age of 6.07±0.28 (range, 3 to 9) years. Preoperative, postoperative 1. week, 1. month and

	RBC	Hgb	Htc	MCV
Preoperative	4.6±0.48	12.37±0.88	36.81±2.76	80.22±5.74
First week	4.49±0.56	12±1.17	36.24±3.85	80.40±6.26
First month	4.66±0.51	12.3±0.93	37.13±2.94	79.91±5.73
Third months	4.80±0.43	12.68±0.83	38.13±3.79	80.38±4.93

Table 1: Values of RBC, Hb, Htc and MCV in preoperative period and during first week, first month and third month.

3. months mean values of RBC, Hb, Htc and MCV were presented on Table 1. There were statistically significant differences between four consecutive measurements of RBC, Hgb and Htc (p=0.001, p=0.001, and p=0.004 respectively). However, no significantly differences were determined in the measurements of MCV (p=0.182). When preoperative values compared with postoperative tests separately, RBC (p=0.02) and Hgb (p=0.007) signify cantly decreased one week after the adenotonsillectomy; while Htc and MCV values significantly decreased in the same period.Post-tonsillectomy bleeding was not observed in any patient.

One month after surgery, blood levels were determined similar. RBC (p=0.001), Hgb (p=0.002) and Htc (p=0.005) were significantly increased 3 months after operation.

DISCUSSION

Tonsillectomy is an extremely successful procedure in the treatment of upper airway obstruction and recurrent tonsillitis, performed by any technique. For this reason tonsillectomy with or without adenoidectomy is one of the most commonly performed surgery for children in ear nose throat practice (1). Perioperative blood loss is an unavoidable situation during surgery. An ideal tonsillectomy technique should also be the technique with minimal intra operative blood loss(2). Perioperative and postoperative blood loss in adenotonsillectomy is related with the surgical technique, the status of the patient's coagulation system, the per-operative infection, and systemic meta bolic conditions (3).

In childhood, the amount of blood loss and postoperative effects are more important than adults. Because in child ren the normal physiological mechanisms are less adaptable to a rapid blood loss and breakdown of these compensatory mechanisms may be initiated by a small ler loss than in adults(4).

In the early post-operative period, compensation process begins for the blood loss(5). During this period not only hematopoietic growth factors increases but also increase in many growth factors were determined after adenotonsil lectomy. Yilmaz(6) and Gumussoy(7) et al. showed significant increases in growth factors and hormones with their studies. After adenotonsillectomy, increa se of these growth factors are the reason of overall body growth and factor that accelerates haematopoiesis. We can explain our postoperative 1. and 3. months increased RBC, Hb, Htc and MCV values by these growth factors.

The results of our short-term follow-up study indicate that tonsillectomy

reduces blood levels in early period prior to blood loss. As growth factors increases, haematopoiesis starts and blood levels reaches to preoperative levels approximately in one-month time. Adenotonsillectomy leads to a significant increase in blood parameters after one month.
Conversely, a child who had bleeding tonsil required iron supplements for the next six weeks (8).Adenotonsillectomy under normal condition did not indicate any additional treatment according to the present study.

CONCLUSION

Although RBC, Hgb and Htc decrease after adenotonsillectomy within one week, this very rare procedure did not require additional treatment. Surgeon must keep in mind that this blood loss is becoming more important when a postoperative complication occurred like late bleeding or dehydration due to feeding difficulties.

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