

Chair and Department of Paediatric Otolaryngology, Phoniatory and Audiology
Medical University of Lublin

GRAŻYNA NIEDZIELSKA, MICHAŁ KOTOWSKI, ARTUR NIEDZIELSKI

*The incidence of coagulation tests' abnormalities
in patients prepared for surgical treatment*

Preoperative coagulation assessment in children is useful because of its potential value in preventing perioperative hemorrhage. On the other hand, some authors claim that coagulation screening tests are too expensive (\$81 in the USA). With reference to incidence of hemorrhage after laryngologic surgery, they are unprofitable from the economic point of view. The American Academy of Otolaryngology, Head and Neck Surgery recommend performing of hemostatic screening tests only in children whose medical history indicates a potential coagulation problem. Nevertheless, laryngologists are guided by their individual rules.

MATERIAL AND METHODS

The retrospective study included children undergoing surgery in the Department of Paediatric Otolaryngology, Phoniatory and Audiology, Medical University of Lublin in the years 1997–2004. All patients had routine preoperative laboratory screening with prothrombin time (PT), activated partial thromboplastin time (APTT) and fibrinogen. In case of abnormality in the APTT, factors VIII–XII levels were evaluated, and when isolated prolongation of the PT took place, factor VII level was estimated.

RESULTS

Out of total 10,801 patients prepared for surgical treatment, in 196 (1.81%) coagulation disorders were detected. Ages ranged from 2 to 18 (average 9.6 years); 126 (64.29%) were males and 70 (35.71%) were females. The most common causes of coagulation tests' abnormalities are listed in Table 1. In our study group, the coincidence of a few types of disturbances were noted in 4 cases.

Tab.1 The most common coagulopathies

The type of abnormality	Number of children	%
Factor XII deficiency (Hageman's anomaly)	85	43.36%
Factor VII deficiency (hypoproconvertinemia)	57	29.08%
von Willebrand's disease	13	6.63%
Haemophilia A (factor VIII C deficiency)	10	5.10%
Haemophilia B (factor IX deficiency)	8	4.08%
Lupus anticoagulants (LA)	5	2.55%
Factor XI deficiency (haemophilia C)	2	1.02%
Thrombocytopenia	2	1.02%
Hypofibrinogenemia	2	1.02%
Evaluation of APTT (not associated with clinical bleeding)	16	8.16%

DISCUSSION

Zwack et al. state that the assessment of the APTT enables to detect congenital hemostatic abnormalities such as von Willebrand's disease (VWD) and hemophilia (2, 5). In the examined group, VWD and hemophilia were observed in 33 cases (16.83% of the patients with hemostatic disturbances and 0.3% of the whole group). From the clinical point of view, patients with liver dysfunction or after treatment with hepatotoxic drugs often present prolonged PT and APTT, so they need detailed observation. The prolongation of APTT may be connected with the presence of lupus anticoagulant (LA). LA was detected only in 5 cases in our study. Although its presence has no influence on the incidence of hemorrhage, it is described as a frequent cause of the prolonged APTT.

Aspirin and other anti-inflammatory drugs, antihistamines, some antibiotics, anticoagulants, psychotropic drugs may have the effect on prolongation of PT and APTT. Despite incomplete anamnesis, the permanent using of antihistamins was detected in 29 children. It is considered that patients should avoid aspirin and other anti-inflammatory drugs two weeks before and two weeks after surgical treatment preventing from coagulation disturbances.

Haemorrhage after surgery on tonsils and adenoids, which are the most frequent procedures in pediatric otolaryngology, are relatively rare and range from 2% to 7%. We did not observe any haemorrhage causing a prolongation of hospitalization period and necessity of plasma infusion in our study group. Medical history and laboratory data have the great specificity and highly negative prediction value (1, 3). Abnormal coagulation tests enable to postpone the term of surgery contributing to the reduction of haemorrhagic complications. The lack of complications shortens the time of hospitalization with a benefit of the cost of treatment. However, on the basis of the conducted research we are not able to confirm that coagulation screening tests are profitable in all patients due to comparative rarity of coagulation disorders. Undoubtedly, it is beneficial from the point of view of the operating team and parents, preventing from complications (4).

REFERENCES

1. Asaf T. et al.: The need for routine preoperative coagulation screening tests (prothrombin time PT/partial thromboplastin time PTT) for healthy children undergoing elective tonsillectomy and/or adenoidectomy *Int. J. Pediatr. Otorhinolaryngol.*, 61, 217, 2001.
2. Berlucchi M. et al.: Adenotonsillectomy in children with von Willebrand's disease: how and when. A case report with review of the literature *Int. J. Pediatr. Otorhinolaryngol.*, 65, 253, 2002.
3. Burk C. D. et al.: Preoperative history and coagulation screening in children undergoing tonsillectomy *Pediatrics*, 89 (1/2), 691, 1992.
4. Koscielny J. et al.: A practical concept for preoperative identification of patients with impaired primary hemostasis *Clin. Appl. Thromb. Hemost.*, 10 (3), 195, 2004.
5. Zwack G. C., Derkay C. S.: The utility of preoperative hemostatic assessment in adenotonsillectomy. *Int. J. Pediatr. Otorhinolaryngol.*, 39, 67, 1997.

SUMMARY

Coagulation disorders lead to disturbances of haemostasis process. Haemorrhagic diathesis may be caused by pathological changes in vascular walls, abnormalities in platelets amount or some disturbances in plasma coagulation mechanism. The aim of our research was the assessment of incidence

and type of coagulation disorders in children prepared for surgical treatment. The study was conducted on the group of 10,801 children treated surgically at the Department of Paediatric Otolaryngology, Phoniatry and Audiology, Medical University of Lublin in the years 1997–2004. On the basis of our research coagulation disorders were observed in 196 patients (1.81%). The most common abnormalities were: factor XII deficiency, factor VII deficiency and von Willebrand's disease. Moreover, we observed lupus anticoagulant and thrombocytopenia anticoagulant in a few patients. The evaluation of coagulation profile enables to decrease the risk of perioperative haemorrhage. An identification of the type of disorder points to the proper medical treatment.

Występowanie nieprawidłowości w układzie hemostazy u pacjentów przygotowywanych do leczenia operacyjnego

Zaburzenia hemostazy prowadzą do upośledzenia krzepnięcia. Skazy krwotoczne mogą być spowodowane zmianami w ścianie naczyń krwionośnych, zaburzeniami liczby płytek krwi albo zaburzeniami osoczowych mechanizmów krzepnięcia krwi. Celem pracy była analiza występowania oraz określenie rodzaju nieprawidłowości w układzie krzepnięcia u pacjentów zakwalifikowanych do leczenia operacyjnego. Badaniami objęto 10801 pacjentów leczonych operacyjnie w Klinice Otolaryngologii Dziecięcej, Foniatrii i Audiologii AM w Lublinie w latach 1997–2004. Na podstawie przeprowadzonych badań stwierdzono nieprawidłowości w układzie hemostazy u 196 pacjentów, co stanowiło ok. 1,81% chorych. Najczęstszymi anomaliami były: niedobór czynnika XII, VII oraz choroba von Willebranda. Stwierdzono również trombocytopenię oraz potwierdzono obecność krążącego antykoagulanta u kilku pacjentów. Ocena układu hemostazy pozwala na zmniejszenie ryzyka krwawienia w czasie i po leczeniu operacyjnym. Identyfikacja rodzaju anomalii wskazuje właściwą metodę postępowania terapeutycznego.

