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School Urine Screening (SUS) program in Korea: History, Outcome, and Perspectives

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Since 1981, a school screening program for proteinuria began for some students in Seoul city by School Health Center. It was reported that the prevalence of asymptomatic proteinuria was 0.28% on average, 0.2% at 11 years, 0.36% at 14 years, and 0.25% at 17 years of age. The prevalence was higher in girls at 11 years but was higher in boys at 17 years during the period of 1987~1994.

Since 1998, SUS was implemented nationwide for all elementary, middle, and high school students by the Basic Health Screening Act and the School Health Act. Since 2005, the SUS program was amended to be included in the "School Health Screening" for the first and the fourth-graders in elementary schools, the first graders in middle and high schools. In addition, some of the students who do not undergo the "School Health Screening" do the urine screening as a "Separate Test".

In a recent report, the prevalence of occult blood in SUS was 3.1% and 4.2% in the first and the fourth graders of elementary schools, and 6.4% and 4.7% in the first graders of middle and high schools, respectively. The average prevalence of occult blood was 2.8% in boys and 6.5% in girls. The prevalence of isolated proteinuria was 1.1% and 1.7% in the first and the fourth-graders of elementary schools and 2.7% and 1.7% in the first graders of middle and high schools, respectively. The average prevalence of isolated proteinuria was 1.3% in boys and 2.3% in girls. The prevalence of cases with positive both occult blood and proteinuria was 0.1% in both the first and the fourth-graders of elementary schools and 0.4% and 0.2% in the first graders of middle and high schools, respectively. The prevalence of all abnormalities in SUS was higher in girls and in the first graders of middle school.

Because students with persistent isolated proteinuria or both hematuria & proteinuria can have serious glomerulopathies such as IgA nephropathy, FSGS, Alport syndrome, or MPGN, a thorough investigation for kidney diseases is necessary after orthostatic proteinuria is ruled out. If there is a family history, even microscopic hematuria needs detailed investigation. Asymptomatic microscopic hematuria without a family history may require long-term observation. It is difficult but essential to continue observation without giving too much concern to the students or parents by sufficient explanation.

In the cost-benefit analysis of urine screening, the costs are false positivity, overdiagnosis,



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complications of additional diagnostic tests, and excessive anxiety. To reduce the costs, with the support of the Korea Disease Control and Prevention Agency, the Korean Society of Pediatric Nephrology prepared educational materials about SUS for health teachers and students.

We need further investigations on the long-term course of asymptomatic microscopic hematuria without family history and the effects of SUS on the incidence of CKD in Korea. With these studies, guidelines for the best SUS program and follow-up should be established.