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Correspondence

On the endoscopic methods used in pediatrics with questionable indications



H I G H L I G H T S

- Partial isolation from international scientific community can result in application of invasive methods without sufficient indications.
- Performing invasive procedures, the risk-to-benefit ratio should be kept as low as possible.
- Practical recommendations must be based on reliable and reproducible research.

Keywords:

Asthma
Bronchoscopy
Endoscopy
Biopsy
Children

This correspondence is a continuation of the series of reports on invasive procedures used in the former Soviet Union (SU) with questionable clinical indications, also for research [1–3]. The purpose was to remind that performing invasive procedures, the risk-to-benefit ratio should be kept as low as possible. A special attention is given to the bronchoscopy in children and adolescents with bronchial asthma, applied in spite of the widespread opinion that it brings not much benefit [4]. In the international literature, no particular role of bronchoscopy in the diagnostics and treatment of asthma has been specified, asthmatics being regarded at enhanced risk for complications from this procedure [4]. Among indications for bronchoscopy in asthma are persistent wheeze unresponsive to bronchodilators and other adequate therapy [5,6]. While there are other diagnostic tests, the most common indication for bronchoscopy in asthma is a search for alternative causes of the symptoms [5]. Lavage of bronchi can be indicated in severe asthma under certain conditions [7]. Exacter formulations are avoided here because this letter is not an instructive publication. The newest Russian-language textbooks are largely based on the international literature. However, the preceding generation of textbooks and manuals contained recommendations that were partly at variance with internationally accepted approaches. In asthmatics, the purpose of bronchoscopy was declared to be the search for signs of dependence of the pathological process on the infection and localization of inflammatory lesions [8,9]. Abundant secretion or mucopurulent sputum in a child was presented as an indication for bronchoscopy “for evaluation of endobronchial inflammation”

[10]. It was stated in the instructive monograph [9] that bronchoscopy is recommendable “almost in all subacute and chronic respiratory diseases” in children. Asthma, bronchitis and tuberculosis were generally posited as indications for bronchoscopy [11,12]. Accordingly, bronchoscopy was used in some institutions in children with asthma both during remissions and exacerbations, in mild and severe forms [13–15], as well as in “pre-asthma” i.e. bronchitis with “elements” of bronchospasm and allergy [16]. Some experts applied up to 15 bronchoscopies (1–2 weekly) in pediatric asthma [17].

Furthermore, the “atrophic type” of chronic bronchitis was regarded as an indication for bronchoscopy [18]. Efficiency of therapeutic bronchoscopy in moderate bronchitis was pointed out by the scientist, who applied 5–6 bronchoscopies per treatment course [14]. Laser treatment was applied in children via bronchoscope in asthma, bronchitis and chronic pneumonia [19,20], also in the presence of “pronounced atrophy of bronchial mucosa” [21]. It should be commented that, similarly to other forms of electromagnetic radiation, laser at lower power densities causes warming and at higher densities – damage of tissues. From the viewpoint of general pathology, atrophy may progress due to an additional damage. Bronchial biopsies were collected for research from patients with “chronic atrophic bronchitis” and “primary atrophic bronchopathy” including that supposedly caused by ionizing radiation [22], whereas histological specimens were thick and difficult to evaluate. Not only flexible but also rigid bronchoscopes have been used [23]. For acute pneumonia in children, bronchoscopy was recommended to determine the type of inflammation in the bronchi (catarrhal, purulent); in chronic pneumonia it was held necessary for the same purpose and to exclude tuberculosis and congenital conditions [8].

Primary tuberculosis in children was regarded as an indication for bronchoscopy [8], although it is reportedly no more sensitive for the culture of *Mycobacteria* than gastric aspiration [5,6]. In destructive tuberculosis, therapeutic bronchoscopy (1–2 weekly during 2–4 months) was recommended by the Ministry of Health [24] and accordingly applied, while the principle of informed consent was not sufficiently known and observed [25]. Bronchoscopy was applied as a routine method in all forms of tuberculosis in

children and adults in different institutions and research cohorts [26–31] also when tuberculosis was suspected [32,33]; it was recommended for young patients with “hyperergic” (high degree of hypersensitivity) tuberculin tests [34] and within the diagnostic algorithm for cases of suspected tuberculosis with negative results of sputum examination for *Mycobacteria* [35]. Endoscopic monitoring of the therapy results was recommended for pulmonary tuberculosis with non-specific bronchial lesions [29].

As mentioned above, bronchial biopsy specimens were used for research, whereas some morphological illustrations were suboptimal quality, descriptions being stereotype, morphometric and other quantitative indices uniformly improving after a medical or surgical asthma treatment [22,36–38]. Some morphological descriptions were doubtful e.g. “atrophic processes” in bronchi of asthmatic children increasing with time: atrophy or “subatrophy” of bronchial mucosa was reportedly found in 79.5% of asthmatic children older than 12 years [23]. Furthermore, broncho- and gastrodoudenoscopy were used in “chronic non-specific pulmonary diseases” (including asthma and chronic bronchitis) reportedly found in 4.08% of children residing in industrially contaminated areas of Moscow and the suburbs [39]. Bronchoscopy was used as a screening method in young (mean age 19.5 years) patients diagnosed with community-acquired pneumonia (1478 bronchoscopies in 977 patients), while the most frequent finding was mucopurulent bronchitis [40]. Biopsies were collected for research from large bronchi of patients with known lung cancer, whereas quality of histological and ultrastructural images was suboptimal [37]. Besides, gastrodoudenoscopy with biopsies used for research were applied in children with rheumatoid arthritis, dermatomyositis, scleroderma, systemic lupus erythematosus, respiratory and hepatobiliary diseases [40–46]. Gastroscopy was used for the screening of children born to mothers with bronchial asthma [47]. Informed consent was mentioned only in some recent publications [48–50]. Admittedly, as far as it can be perceived from the literature, bronchoscopy is less frequently used in children for research today. For example, in the study [48], bronchoscopy was performed in children 5–15 years of age with moderate to severe asthma, while informed consent was obtained from the children’s parents.

It should be stressed in conclusion that, performing invasive procedures, the risk-to-benefit ratio should be kept as low as possible. The principle of informed consent or assent must be applied also in children and adolescents [51–53]. The procedural quality assurance in endoscopy is of importance, in particular, training methods not involving patients, monitoring of endoscopic skills and selection of capable trainees. Practical recommendations must be based on reliable and reproducible research. Only such research should be included into reviews and meta-analyses.

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