Professional and Management Issues in the Survey and Control of Nosocomial Infections in General Surgery Hospitals

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Nosocomial infections have a special place in human pathology, being considered a major population health issue for all the health care units (1, 2, 3, 4). NI are characterized by a high incidence and severe clinical and functional consequences that lead directly or indirectly to the abrupt increase of treatment costs and cause economic, moral and social damage.

Postoperative infectious complications with septic-purulent clinical pictures do not only lead to avoidable unnecessary suffering, but also prolong the hospital stay from 5.6 to 35.4 days, depending on the unit profile, a mean increase of 14.07 days (5,4,6,7), plus also great economic loss.

MATERIAL AND METHODS

a. A questionnaire containing 10 questions (Annex I) was designed and administered to the health care personnel of two general surgery units – from hospital A and B respectively – in order to assess the level of professional information required for the awareness, prevention and control of NI.

b. We studied the measures taken against the infection sources identified by clinical and laboratory check-up of the personnel (in years 2007 and 2010), as well as the attitude towards the pathogens carriers.

c. The measures taken against the ways of transmission were studied by assessing the control of septic and aseptic routes,
current and final disinfection, aseptic techniques and sterilization of equipment.

d. We surveyed the measures taken in the case of patients with high risk of NI.

e. We surveyed the use of antibiotics and disinfectants

**RESULTS**

a. Forty (40) questionnaires were administered in hospital A and 25 in hospital B, to the nurses and patient caretakers of the two general surgery units (tab. 1)

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Legend: A – hospital A, B - hospital B; 0-correctly filled in questionnaire; 1,4,5,6 – Wrong answers

b. In hospital B clinical and laboratory examinations were performed in 40 health care personnel members from the surgical unit and 40 from the operating block in the years 2007 and 2010.

In the surgical unit there were two documented cases of healthy HBsAg carriers, one nurse diagnosed in 2010 and a stretch carrier diagnosed when hired, in 2007; both individuals were under hepatoprotective therapy.

There were 3 cases of healthy HBsAg carriers in the operating block (one nurse and two caretakers), diagnosed in 2007, under hepatoprotective therapy, as well as two cases of HCV (caretakers) diagnosed in 2010, under Interferon therapy. In none of the above 7 cases could the infection source be identified.

In hospital A 34 personnel members of the surgical unit and 16 from the operating block underwent clinical and laboratory examinations in 2010, 100% were clinically healthy, with negative tests for HBsAg, HCV-Ab, anti-HIV Ab, VDRL.

In 2007 clinical and laboratory examinations were performed in only 12% of personnel, all being healthy and negative for HBsAg, HCV-Ab, anti-HIV Ab, VDRL.

c. Surgery units from hospital A and B are on the last floor of the building, have a good connection with the hospital patient reception, the operating block, the ICU, sterilization services, personnel rooms, dining rooms, bathrooms, storage rooms.

Patient wards in both hospitals were divided into septic and a septic. The rooms are large enough for patient stretchers and wheelchairs. Beds allow access to the patient from three sides and are equipped with signaling systems.

Wound care wards included a gynaecological table, dressing cart, cupboards for instruments, sterile and non-sterile material, antiseptic solutions.
The operating blocks in the two hospitals included several operating rooms and annexes, directly linked to the ICU wards. They are isolated from circulation, access being through a buffer room and with strict observance of asepsis and anti-sepsis rules.

Current and final disinfection in the two sections use disinfectants approved by the Ministry of Health, in the recommended concentrations.

The following are used:
- **BICLOSOL** – chlorine disinfectant for surfaces, drinking water, dishes, linen and clothing.
- **CIDEX OPA** – high level disinfectant used especially for endoscopic equipment
- **THOR** – used for surfaces, thermo-sensitive equipment, metallic instruments, pre-disinfection of instruments before sterilization, textiles
- **TERRALIN protect** – used for the disinfection of medical devices, surfaces, sensitive materials
- **SUPRASEPT** – high level disinfectant, used for thermo-sensitive materials, metallic instruments, medical devices, surfaces
- **MIKROYD AF Liquid** – rapid spray disinfectant
- **MEDICARINE** – chlorine tablets – used for washable surfaces, various objects, equipment, toilets and bathrooms

The health care personnel performing the disinfection took into account the resistance to disinfectants, the factors influencing disinfection, observed the general disinfection practice rules and the methods of application of chemical disinfectants according to the object treated.

Instruments of the two surgical units were sterilized using devices approved by the national health authority (Ministry of Health). Instructions for used were displayed visibly for every sterilizer.

Health care personnel affirmatively observed aseptic techniques, correct use of protection equipment and accessories (gloves, masks, eyeglasses, gowns), the operative preparation of the skin, the mucosa and/or clothing following contamination with biological fluids, the prevention of infection transmission through contaminated instruments, prevention of open wounds and mucosal membranes exposure, prevention of skin injury by needles or sharp instruments.

*d.* The measures taken in the case of patients more susceptible to NI were focused on isolation, increase of general body resistance, chemoprophylaxis and artificial immunization in certain cases; overall the measures were modest. The main emphasis in the daily activity was on the diagnosis and performance of the surgical act.

*e.* In both hospitals the main measure taken against NI prevention was antibiotic therapy. The frequency of active NI cases evidenced retrospectively by studying the records over a period of 8 months was 9.34% (A) and 9.60% (B) respectively, as compared to a reported frequency of 0.88% in hospital A and 0% in hospital B.

Antibiotic therapy in hospital A was prescribed in 62.83% of the cases as monotherapy, 28.3% as antibiotic associations, while in 8.84% no antibiotics were prescribed in the hospital. We could not document whether antibiotics were prescribed and bought by the patients themselves.

In hospital B 35.21% of NI cases were treated with monotherapy, 64.78% with drug associations and in 4.22% no antibiotics were prescribed in the hospital. Nor in this case could we document whether antibiotics were prescribed and bought by the patients themselves.
DISCUSSION

Results obtained after distributing the questionnaire to members of the health care personnel, especially those in the surgery unit of hospital B, revealed considerable problems regarding the professional knowledge necessary for NI prevention and control.

It is more than imperative to develop continuous training programmes for the health care personnel, with full responsibility and adoption by the medical staff of the adequate prophylactic practices, for applying the NI prevention measures and evaluating their efficiency (8, 9, 10, 11).

Nosocomial transmission can be reduced by application of standard prevention measures and patient confinement, taking into account the transmission channel of the infectious agents in a hospital environment (12, 13).

Hygiene of the hands remains the essential element of standard prevention measures and the most important method in the practical activity for reducing nosocomial transmission of infectious agents (13, 14, 15). Scientific motives, indications, methods and products used for hand hygiene are extremely well known (16-24) and observing this professional behavioural act is above all discussion.

All health care, clinical and laboratory personnel must be submitted to more rigorous and thorough controls, taking into account that hepatitis B and C viruses as well as HIV transmission are of utmost importance both for the personnel and patient health, because of the severity of late consequences of persistent infections and the limitations of the current treatment methods (25). Exposure to these germs must be considered – according to law - a medical emergency, for which immediate measures are required in order to prevent the spreading of the infection (26, 25, 27).

Antibiotics should not replace real and effective prevention and control measures of NI. Misuse of antibiotics explains but does not justify why infectious agents become more and more resistant to antibiotics. More and more frequently we witness the decision of clinicians to use reserve antibiotics in the treatment of infections, composite drugs which are considerably more expensive and which increase costs involved in patient treatment (28,29,30,31, 32,33,34), without addressing the functional deficiencies of the hospital and the professional staff deficiencies.

CONCLUSIONS

Knowledge of the fundamental principles of NI monitoring, prevention and control is undoubtedly deficient and explains both the underreporting of NI, as well as its real frequency, which is significantly higher than the one found in official accounts.

Learning and correctly applying the NI prevention measures by the health care personnel during medical assistance is axiomatic and can improve the quality of NI control.

Empirical “protective” antibiotic treatment, clearly expensive and unnecessary, must be avoided and its indications should be updated.

REFERENCES

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