SELECTED ABSTRACTS

Editor - Rohan Siriwardena

Effect of daily chlorhexidine bathing on hospital-acquired infection

Climo MW et.al .New England Journal of Medicine 2013 Feb 7;368(6):533-42

Background

Results of previous single-center, observational studies suggest that daily bathing of patients with chlorhexidine may prevent hospital-acquired bloodstream infections and the acquisition of multidrug-resistant organisms (MDROs).

Methods

We conducted a multicenter, cluster-randomized, nonblinded crossover trial to evaluate the effect of daily bathing with chlorhexidine-impregnated washcloths on the acquisition of MDROs and the incidence of hospital-acquired bloodstream infections. Nine intensive care and bone marrow transplantation units in six hospitals were randomly assigned to bathe patients either with no-rinse 2% chlorhexidine-impregnated washcloths or with nonantimicrobial washcloths for a 6-month period, exchanged for the alternate product during the subsequent 6 months. The incidence rates of acquisition of MDROs and the rates of hospital-acquired bloodstream infections were compared between the two periods by means of Poisson regression analysis.

Results

A total of 7727 patients were enrolled during the study. The overall rate of MDRO acquisition was 5.10 cases per 1000 patient-days with chlorhexidine bathing versus 6.60 cases per 1000 patient-days with nonantimicrobial washcloths (P=0.03), the equivalent of a 23% lower rate with chlorhexidine bathing. The overall rate of hospital-acquired bloodstream infections was 4.78 cases per 1000 patient-days with chlorhexidine bathing versus 6.60 cases per 1000 patient-days with nonantimicrobial washcloths (P=0.007), a 28% lower rate with chlorhexidine-impregnated washcloths. No serious skin reactions were noted during either study period.

Conclusions

Daily bathing with chlorhexidine-impregnated washcloths significantly reduced the risks of acquisition of MDROs and development of hospital-acquired bloodstream infections.

Commentary

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Hospital acquired infections caused by multidrug resistant organisms create a negative impact on patients outcomes and health economics. Methicillin resistant Staphylococcus aureus and Vancomycin resistant enterococci have been the main culprit for surgical site infections, catheter associated urinary tract infections and vascular device associated sepsis in critical care settings. The infections caused by these organisms are difficult to treat due to complex drug resistant patterns. Therefore prevention has turned out to be the main answer to a complicated problem. Chlorhexidine gluconate is a broad spectrum antiseptic agent which has activity against multidrug resistant organisms. Previous observational studies have showed daily skin decontamination of patients with chlorhexidine in critical care settings to reduce hospital acquired infections caused by multidrug resistant organisms.

This multicenter, cluster-randomized, crossover trial had evaluated the effect of daily bathing with chlorhexidine-impregnated washcloths on the acquisition of multidrug resistant organisms and the incidence of hospital-acquired bloodstream infections. It concludes to show a statistically significant reduction in the acquisition of multidrug resistant organisms and the incidence of hospital-acquired bloodstream infections with daily bathing with chlorhexidine. This is a non-blinded study but it is understandable that it is not easy to perform double blinded studies in all surgical settings. In the background of developing evidence of this nature, it would be possible to lay down guidelines in the near future to use chlorhexidine-impregnated washcloths to minimize hospital acquired infections

especially in critical care settings.

Hydroxyethyl Starch Reduces Coagulation Competence andIncreases Blood Loss During Major Surgery Results From a Randomized Controlled Trial

Rasmussen KC et.al Annals of Surgery 2014 Feb;259(2):249-54.

Objective

This study evaluated whether administration of hydroxyethyl starch (HES) 130/0.4 affects coagulation competence and influences the perioperative blood loss.

Background

Artificial colloids substitute blood volume during surgery; with the administration of HES 130/0.4 (Voluven, Fresenius Kabi, Uppsala, Sweden) only a minor effect on coagulation competence is expected.

Methods

Eighty patients were scanned for enrollment in the study, and 40 patients fulfilled the inclusion criteria. Two patients withdrew their consent to participate in the study, and 5 patients were excluded. Thus, 16 patients were randomized to receive lactated Ringer's solution and 17 to receive HES 130/0.4.

Results

Among the patients receiving HES 130/0.4, thrombelastography indicated reduced clot strength ($P < 0.001$) and blinded evaluation of the perioperative blood loss was 2.2 (range 0.5 to 5.0) versus 1.4 (range 0.5 to 2.4) L in the patients who received HES 130/0.4 or lactated Ringer, respectively ($P < 0.038$). The patients in the lactated Ringer's group, however, received more fluid ($P < 0.0001$) than those in the HES 130/0.4 group. There was no significant difference between the 2 groups with regard to frequency of reoperations or the length of hospital stay, but use of HES 130/0.4 was both more expensive and less efficacious than the use of lactated Ringer.

Conclusions

Administration of HES 130/0.4 reduced clot strength and perioperative hemorrhage increased by more than 50%, while administration of lactated Ringer's solution provoked an approximately 2.5 times greater positive volume balance at the end of surgery

Commentary

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This study evaluated whether administration of hydroxyethyl starch(HES) 130/0.4 affects coagulation competence and influences perioperative blood loss in patients undergoing cystectomy.

The results indicate that the coagulation parameters in the two groups of patients were comparable at induction of anaesthesia. Details of base line renal function are not indicated.

A significant impairment of coagulation competence was noted with lower platelet counts and fibrinogen levels and prolonged INR in addition to significantly reduced development and strength of the clot in the HES group.

The volume of intra operative blood loss and transfused requirements were also greater in the HES group. A causal relationship between HES induced reduced coagulation competence and increased transfusion requirements maybe inferred.

However the total volume of fluid transfused, the positive fluid balance, the serum lactate levels and the mass of ephedrine used to maintain haemodynamic stability was greater in the RL group. Despite this the morbidity, including the rate of reoperations and length of hospital stay were comparable in the two groups. Late complications of blood transfusions have obviously not been measured.

A rise in serum creatinine on day one seen in the HES group did not persist. Studies carried out in septic patients have demonstrated a higher incidence of acute kidney injury requiring renal replacement in patients receiving HES infusions (1).

References

1. Hydroxyethyl starch 130/0.42 versus Ringer's Acetate in Severe Sepsis. Perner et al, New England Journal of Medicine 2012;367:124-134

Duration of antibiotic treatment after appendicectomy for acute complicated appendicitis.

van Rossem CC et.al. British Journal of Surgery. 2014 May;101(6):715-9.

Background

Antibiotic treatment after appendicectomy for complicated appendicitis aims to reduce postoperative infections. However, available data on the duration of treatment are limited. This study compared the difference in infectious complications between two protocols, involving either 3 or 5 days of postoperative antibiotic treatment.

Methods

This was an observational cohort study of all adult patients who had an appendicectomy between January 2004 and December 2010 at either one of two hospitals in the same region. At location A, the protocol included 3 days of postoperative antibiotic treatment, whereas at location B it specified 5 days. The primary outcome was the development of postoperative infections as either superficial wound infection or deep intra-abdominal infections.

Results

A total of 1143 patients with acute appendicitis underwent appendicectomy, of whom 267 (23.4 per cent) had complicated appendicitis. The duration of postoperative antibiotic treatment was 3 days in 135 patients (50.6 per cent) and at least 5 days in 123 (46.1 per cent). No difference was found between antibiotic treatment for 3 or 5 days in terms of developing an intra-abdominal abscess (odds ratio (OR) 1.77, 95 per cent confidence interval 0.68 to 4.58; P = 0.242) or a wound infection (OR 2.74, 0.54 to 13.80; P = 0.223). In patients with complicated appendicitis, the laparoscopic approach was identified as a risk factor for developing an intra-abdominal abscess in univariable analysis (OR 2.46, 1.00 to 6.04; P = 0.049), but was not confirmed as an independent risk factor for this complication in multivariable analysis (OR 2.32, 0.75 to 7.14; P = 0.144).

Conclusion

After appendicectomy for complicated appendicitis, 3 days of antibiotic treatment is equally effective as 5 days in reducing postoperative infections

Commentary

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Evidence based guidelines on the optimum duration of antibiotic treatment for complicated acute appendicitis is not available and randomized trials on the subject too are very limited.

The current study attempts to provide some data on the use of antibiotics in complicated acute appendicitis. The study is an observational cohort study and the number of patients studied is relatively small. In addition the selection into 3 or 5 days of antibiotics is done on the basis of the institution rather than randomly which introduces an obvious bias. The authors allude to some of the deficiencies in the discussion. The inferences gleaned from such a study must be considered weak evidence and recommendations based on such data must be done with caution and circumspection.

Nevertheless the data supports the view that prolonged use of antibiotics does not confer much benefit to the patients with complicated acute appendicitis and indirectly points to the fact that proper surgical treatment is the key to dealing with complicated acute appendicitis.

In an era of gross misuse of antibiotics the information available from this study must be considered in making therapeutic decisions. Similar larger randomized studies are the need of the 'hour'.

Randomized clinical trial of donor-site wound dressings after split-skin grafting

Brölmann FE. British Journal of surgery 2013 Apr;100(5):619-27

Background

The aim was to study which dressing material was best for healing donor-site wounds (DSWs) after split-skin grafting as there is wide variation in existing methods, ranging from classical gauze dressings to modern silicone dressings.

Methods

This 14-centre, six-armed randomized clinical trial (stratified by centre) compared six wound dressing materials in adult patients with DSWs larger than 10 cm(2) . Primary outcomes were time to complete re-epithelialization and pain scores measured on a visual analogue scale (VAS) over 4 weeks. Secondary outcomes included itching (VAS, over 4 weeks), adverse events and scarring after 12 weeks rated using the Patient and Observer Scar Assessment Scale (POSAS).

Results

Between October 2009 and December 2011, 289 patients were randomized (of whom 288 were analysed) to either alginate (45), film (49), gauze (50), hydrocolloid (49), hydrofibre (47) or silicone (48) dressings. Time to complete re-epithelialization using hydrocolloid dressings was 7 days shorter than when any other dressing was used (median 16 versus 23 days; $P < 0{\cdot}001$). Overall pain scores were low, and slightly lower with use of film dressings ($P = 0{\cdot}038$). The infection rate among patients treated with gauze was twice as high as in those who had other dressings (18 versus 7·6 per cent; relative risk 2·38, 95 per cent confidence interval 1·14 to 4·99). Patients who had a film dressing were least satisfied with overall scar quality.

Conclusion

This trial showed that use of hydrocolloid dressings led to the speediest healing of DSWs. Gauze dressing should be discontinued as they caused more infections. Registration number:

Commentary

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Skin graft donor site wounds are expected to heal spontaneously with epithelialization. Ideal dressing for donor site has long being a controversial issue and the choice is guided by the existing practice in a unit. The randomized clinical trial by BrÖlmann et al had concluded that hydrocolloid dressing reduces the duration of healing and pain, compared to other commonly used dressings.

Pain, infection, excessive exudates, delayed healing and abnormal scar formations are associated with split skin graft donor site healing with a variable frequency. Conventional paraffin and gauze dressing is the widely practiced and relatively cheap technique used in Sri Lanka with acceptable outcome. Even though the study discusses about dressing changes and its inherent problems as pain and tissue damage, number of dressing changes per each dressing technique is not analyzed. In the local setup the initial bulky dressing with paraffin gauze, covered with several layers of absorbent cotton gauze is left undisturbed for 10 – 14 days until the wound is healed, unless they are heavily soaked with excessive exudates.

Donor site infection is multifactorial in etiology and the diagnosis depends on defined criteria, but clinically significant donor site infection with conventional gauze dressing is not a common complication in our setting. In addition, the thickness of the graft and the harvesting technique predominantly influences the duration of healing. Objective and accurate assessment of this variable is not always possible. One of the shortcomings of this study was the cost factor which was not analyzed. This is a significant determinant in a resource limited health system. Despite the proven benefits of hydrocolloid dressing the cost effectiveness of the method is yet to be evaluated.